ICE and REFRIGERATION

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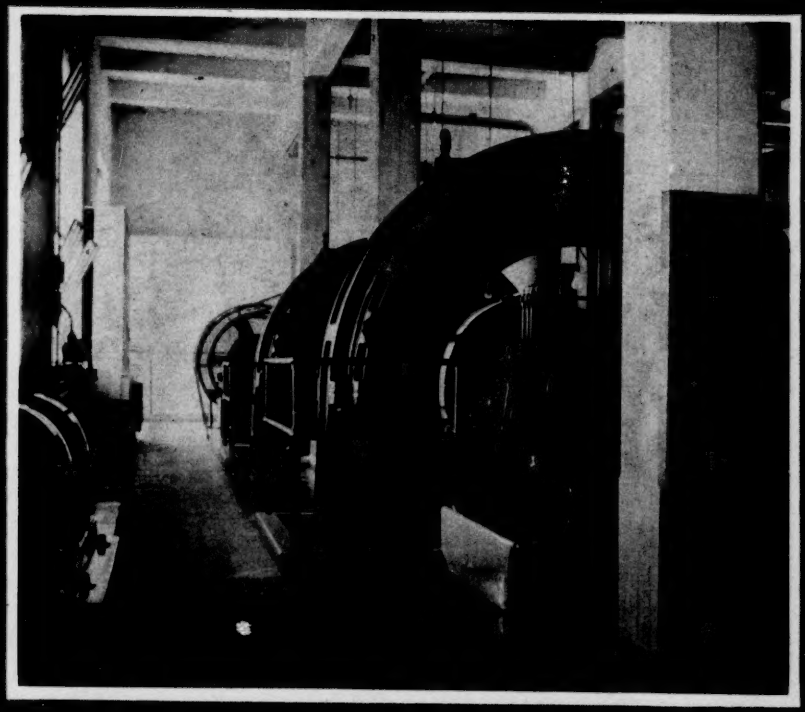
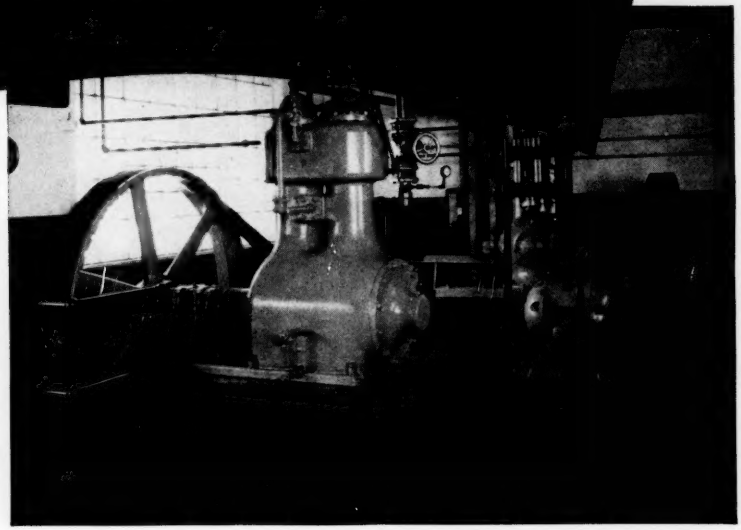


National Ice Association Holds Annual Convention . . . Page 15

DECEMBER • 1951

42nd Annual Convention RAPWI Meets in Memphis . . . Page 31

"WE GET IDEAL COMPRESSOR PERFORMANCE WITH TEXACO CAPELLA OIL"



Both York and Baker compressors are used in the Pioneer Valley Refrigerated Warehouse, Springfield, Massachusetts. Notable efficiency and economy in operation are assured by the use of *Texaco Capella Oils* exclusively.

PIONEER Valley Refrigerated Warehouse, Springfield, Massachusetts, operates the largest facilities in that section of New England for the storage and distribution of nationally famous frozen foods. They say:

"Since we started lubricating our refrigerating compressors with *Texaco Capella Oil* some years ago, we have had ideal results. We are getting maximum refrigeration with minimum operating and maintenance expense, and are particularly impressed by the way *Texaco Capella Oil* keeps both compressors and systems clean."

Now — the new and improved *Texaco Capella Oil (Waxfree)* is available to assure high efficiency and clean compressor operation *even at minus 100° F.* Tests prove it has lower haze and floc temperatures than any other oil — with resulting freedom from wax precipitation. *Texaco Capella Oil (Waxfree)* also has extreme purity, low pour test, high oxidation resistance and freedom from moisture. Will not react with refrigerants. Available in every needed viscosity.

Let a Texaco Lubrication Engineer help you get greater efficiency and economy from *your* compressors. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Capella Oils (Waxfree)

FOR ALL AIR CONDITIONING AND REFRIGERATING EQUIPMENT

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA broadcasts every Saturday afternoon.

ICE AND REFRIGERATION, Vol. 121, No. 6. Published monthly at 433 N. Waller Ave., Chicago, Ill., U.S.A., by Nickerson & Collins Co. Yearly subscription in the U. S., $3.00 per year; other countries, $4.00. Single copies, 35 cents.

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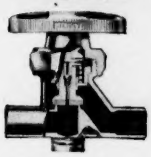
Entered as second-class matter August 8, 1891, Chicago, Ill., under the Act of March 3, 1879. Additional entry at Beloit, Wisc.

HENRY LINE VALVES really give you something extra

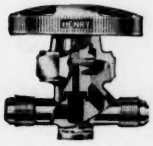
They give more dependable service because of advanced field-proven design and construction as well as patented features.

PACKLESS VALVES
FOR FREON
with Exclusive Balanced-Action



STANDARD TYPE

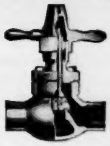
Ball check in balancing channel permits diaphragm inspection and replacement with valves under line pressure. Sizes, ¼" thru ⅝" flare; ¼" thru 1⅝" O.D. Solder, ¼" thru 1" F.P.T.



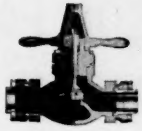
BLUE BANTAM TYPE

Same as standard Balanced-Action valve except that diaphragms cannot be inspected or replaced under line pressure. Size ¼" thru ⅝" flare and O.D. Solder.

PACKED VALVES
FOR FREON
Bronze-Wing Cap Type



Globe and angle types with solder connections, bolted bonnets, sizes ⅞" thru 5⅛" O.D.



SEMI-STEEL WING CAP TYPE

With bolted bonnets and square companion flanges. Furnished with brass tailpieces (O.D. Solder) 1⅜" thru 5⅛" or with steel tailpieces for welding to pipe, sizes 1¼" thru 5".

Also Globe and angle types with F.P.T. connections, sizes ½" thru 2".

PACKED VALVES
FOR AMMONIA
Permanent-Mold Iron and Semi-Steel

Compact and strong with self-aligning stem disc. Sizes (F.P.T.), screw bonnet: ¼" thru 1", bolted bonnet 1¼" thru 2"—with flange connections 1¼" thru 5".

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MELROSE PARK, ILL. (CHICAGO SUBURB)
CABLE: HEVALCO, MELROSE PARK, ILLINOIS

COSTLY INVESTMENTS IN MEAT like this used to be threatened periodically by poor compressor lubrication. Wax formations constantly gummed up the strainers and clogged the lines. But there hasn't been the least trouble since Winkler-Morganthaler recharged the system with Suniso, a refrigeration oil with exceptionally low wax separation point.

More than four years ago, Winkler-Morganthaler, Inc., a Philadelphia concern dealing in industrial refrigeration equipment, switched to Suniso Refrigeration Oil. Since that time the firm has used Suniso in its approximately 4,000 compressors *and has never had a single bit of trouble traceable to oil.*

With the various oils used before, wax formed at low temperatures, and many of the compressors failed at frequent intervals as a result. Calling in a Sun man and trying out Suniso proved to be the answer to the whole problem. Suniso Oils have exceptionally low wax separation points. They come in grades that suit all of Winkler-Morganthaler's requirements and all those of the refrigeration industry.

Equipment manufacturers throughout the industry probably use more Suniso than all other refrigeration oils combined. If you would like complete information or a free Suniso Specification Card, simply call your jobber or write to Department IR-12.

COMPRESSOR FAILURES ELIMINATED WHEN SWITCH IS MADE TO SUNISO OIL

THESE TWO 20 HP COMPRESSORS, recently installed, provide dependable refrigeration for a locker of frozen fruits and vegetables valued at more than $225,000. Both of them are charged with Suniso to eliminate any possibility of wax deposits clogging up the system.

THIS LIQUID STRAINER is pictured as it looked when removed from the circulating ammonia system that cools brine for a chemical research laboratory. There was not a trace of wax or sludge even though the charge of refrigerant and Suniso had been used in the system for over six months at –20°F.

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ICE and Refrigeration

VOLUME 121 NUMBER 6

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December 1951

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Automatic

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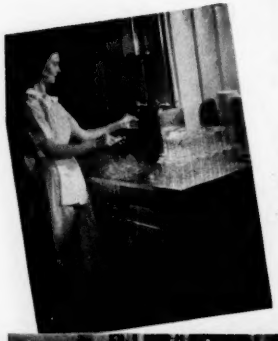
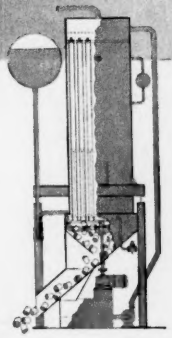
FIRST: Because it produces Vogtice, the novel ready-sized ice, untouched by human hands to meet the highest standards of cleanliness expected by guests and required by most local health authorities for beverage cooling and food refrigeration.



SECOND: Because the Tube-Ice Machine occupies less space, requires less plant, uses less power, operates automatically without labor and thereby makes ice at a lower cost per ton than is possible with any other system.

Photos courtesy of Brown Hotel, Louisville, Ky.



Vogtice, frozen inside tubes of small diameter, is a clear hard ice of superior quality. Either cylinder or crushed ice may be had from the same freezer by simple adjustment. A bulletin containing general information on the Tube-Ice Machine will be sent upon request.

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Today, America's mighty production machine must meet the biggest order in history. It must produce enough to defend freedom and to maintain our economy!

As manufacturers of lubricants—the *one* product indispensable to *all* industry—our part in this tremendous job is to help your machines run at peak capacity . . . provide more continuous production, minimize downtime.

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ANY SIZE — ANY STYLE
HIGH PRESSURE LOW PRESSURE
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VARIOUS—
DESIGNS
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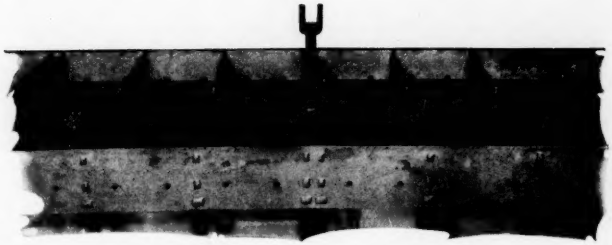

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New STERLING KOOLER KUBES

Save Time... Trouble... Money

in Unit Coolers, Brine Spray Cold Diffusers or Spray Deck Systems

NOW PROFIT by this convenient, dependable way of providing steady operation of refrigerating equipment with less attention, less maintenance effort, than former methods of adding loose salt or salt in bags.

Sterling Kooler Kubes are special heavily compressed 50-lb. refrigeration salt cubes that dissolve at an even rate to strengthen brine continuously and uniformly. They eliminate the labor and guesswork of measuring loose salt.

Kooler Kubes make it possible to maintain brine at the proper *Salometer strength* which substantially reduces product shrinkage and prevents the icing of coils.

Sterling Kooler Kubes save on salt consumption, eliminate the troubles caused by clogging of spray nozzles, and help to eliminate fog in chill rooms.

For better operation with less maintenance, simply place one or more Sterling Kooler Kubes in the pan of each unit cooler or on the spray deck.

Kooler Kubes do the rest . . . slowly dissolving in the recirculating brine for maximum efficiency of the refrigeration equipment. For additional information or technical help, mail coupon at right.

IMPORTANT—For large installations of refrigerating equipment, always investigate the possibility of using the †Lixate Rock Salt Dissolver.

INTERNATIONAL SALT COMPANY, INC.
Scranton 2, Pennsylvania

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†Registered U. S. Patent Office.

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INTERNATIONAL SALT COMPANY, INC.
SCRANTON 2, PENNSYLVANIA

☐ Please have a representative call.

☐ Please send additional information.

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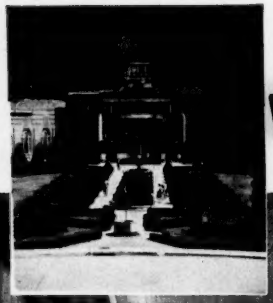


"We take no chances with dirt. We insist on Packaged Processed Ice"

SAYS LESTER J. QUINN, FAIRFAX AIRPORT RESTAURANT, KANSAS CITY, KAN.

The Fairfax Airport Restaurant occupies one wing of the beautiful airport building of Kansas City's Municipal Airport.

Don't Let Another Month Pass Without Using One-Trip Ice Bags

"Formerly, we had ice delivered in bushel baskets, but it was too often dirty when we received it," reports Mr. Quinn. "Now we insist on Union Paper Ice Bags. Our ice is clean and the bags retard melting so satisfactorily that ice delivered on Saturday will carry over for Sunday."

Union Paper Ice Bags help your own operation, too. Your service is faster because handling time on the platform, in loading and at delivery point is cut down. Customers do their own icing and use more ice.

Yes, the companies using Union Paper Ice Bags get the cream of the business according to reports clear across the country. If you haven't already asked for samples of the one-trip Union Paper Ice Bag, don't delay. Write for free samples now.

Wet-Strength Paper Ice Bags have tremendous strength even when soaking wet... thanks to a water repellent resin that binds the fibres of the paper firmly together.

ONE TRIP

UNION Paper Ice Bags

A product of the UNION BAG & PAPER CORPORATION • 233 Broadway, New York 7, N.Y.

Bags of Kraft, Transparent Films, Waxed Paper, Glassine, Laminates

In The Spotlight

THE ANNUAL ICE convention was held November 13-16 at Houston, Texas, where new ideas on merchandising, research and other modern business helps were presented by practical ice men and outside experts. For detailed report see page 15.

ADVERTISING accomplishments in the ice industry during 1951 and a discussion of the plans for 1952 were presented at the National ice convention by the Public Relations Committee. See page 22.

RESEARCH, what is has accomplished for the ice industry was presented at the National Ice Convention by the Research and Engineering Committee. See page 25.

POWER SYSTEMS that are already loaded almost to capacity frequently are called upon to carry an increased load in these days of rapidly expanding production. Low power factor adds to the difficulty. As a means of meeting a need for power factor correction, the use of synchronous motors has certain advantages, as explained in article on page 28.

PERISHABLE FOODS, their procurement and storage from the government's standpoint, is discussed in an interview with Colonel C. F. Kearney, Commanding Officer of the Quartermaster Market Center System who pays high compliment to cooperation and help received from the refrigerated warehousing industry. See page 43.

A REPORT on the work and program of the National Association of Ice Industries was made by Guy W. Jacobs at the annual convention at Houston. See page 51.

COVER PICTURE: Large synchronous motors drive the ammonia compressors in the plant of the Valley Ice Co. at Fresno, Calif. It is a unit of the Central California Ice Co. which carries on an extensive business in cold storage, ice, food freezing and general refrigeration service in this rapidly expanding region.

NEW EQUIPMENT and old problems of how to get the best operation in the plant combined to give broad interest to the N.A.P.R.E. convention program. There was a group of papers on air conditioning which also contained good ideas the engineers could use in most any application. Symposiums and group discussions brought out much basic information and many good ideas on plant operation. A summary of the full program begins on page 31.

THE MODERN method of marketing freshly dressed chickens with ice was shown at the home show held at Jasper, Ind. recently where Swift & Co. operates a new broiler processing p'ant. For pictures and description of this exhibit and the new processing plant, see page 57.

BROILER PRODUCTION promotion was staged by the Greencastle, Indiana Chamber of Commerce with a dressed and live poultry show at the annual Putnam County Fall Festival. Ice was used in the dressed poultry display cases. See page 59.

ICED SWEET CORN is liked by the consumers and they are pleased with its improved quality. With this stimulant they are buying and eating more corn than ever before, and paying better prices. This is good for the ice man because it helps him to sell more ice. See page 55.

60 Years Ago

From the December, 1891 issue of ICE AND REFRIGERATION

THE FREEZING of salmon at the Pacific Coast salmon streams had become quite a business that season, the run of fish having been so great that the canning factories could not handle all the fish offered. Never were the fish so plentiful or so cheap. But the natives soon found out a thing or two and when the canneries ceased buying, the fish were taken to the ice factory at Whatcom where they were frozen and stored during the winter. Many thousands of fish were thus corded away. They cost 1½ cents per pound and were to be sold in the east at the price of the choicest steaks, netting a handsome profit.

THE NATURAL ice season of 1891 drew to a close with an almost invariable burthen of complaint that it had been an unprofitable one, although some operators were inclined to congratulate themselves that it was no worse. Looking forward to the next season the prospect of freezing weather for making a crop was "quite flattering."

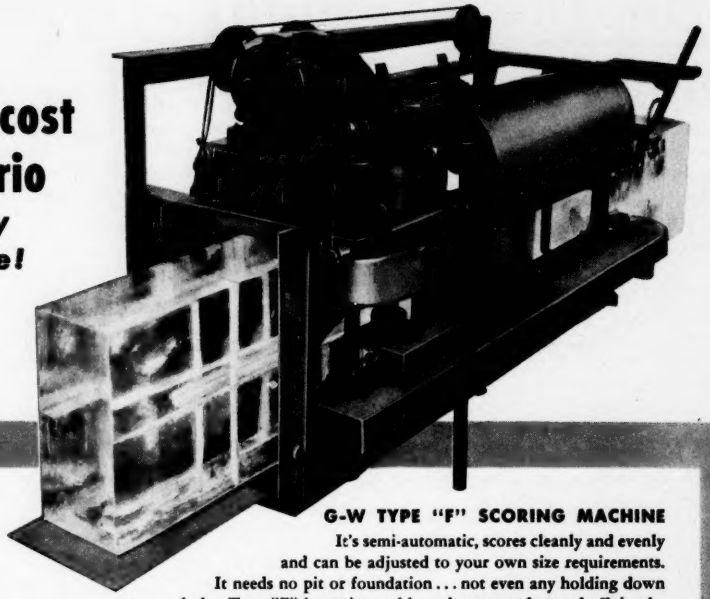
THE MOBILE & OHIO Railroad Co. has put in service a line of improved ventilated refrigerator cars designed expressly for their service for transporting tropical fruits, strawberries and other delicate fruits and vegetables, also perishable merchandise of all descriptions. All the improvements were covered by patents.

THE SANTA FE Railway Company was making preparations to develop the business of raising early vegetables in California for the Chicago market. It was expected to send from Los Angeles solid vegetable trains through on the same time as passenger trains. It was estimated that Chicago could consume and distribute 100 carloads of vegetables daily.

A CORRESPONDENT writes to the editor of ICE AND REFRIGERATION to know if it makes any difference in the cooling power of a piece of ice, if it is laid in the ice box in the same position in which it was formed, or otherwise. The answer of course was "no."

ICE FACTORY construction in the South was on a much more conservative scale in 1891 than in 1890 and "wisely so, as in some parts of the South the ice making business was more or less overdone."

a low cost G-W trio *for every ice house!*



G-W TYPE "F" SCORING MACHINE

It's semi-automatic, scores cleanly and evenly and can be adjusted to your own size requirements. It needs no pit or foundation . . . not even any holding down bolts. Type "F" is semi-portable and operates fast and efficiently. One man can score an average of three 300 or 400 lb. cakes a minute. Sturdy and dependable, you can bank on Type "F" to give you years of trouble-free service.

ALWAYS INSIST ON G-W SAWS

Keep your Cubing and Scoring Machines at their original high peak of efficiency . . . always insist on G-W Saws for replacement. Remember . . . there's only one *genuine* Gifford-Wood Saw and it costs no more than regular blades.

EVERYBODY IS TALKING ABOUT THE NEW "ECONOMISER"

Initial low cost plus low operating maintenance have combined to make the "ECONOMISER" a top favorite with cost-wise ice manufacturers from coast to coast. Compact, only 7'6" high, the "ECONOMISER" breaks, sizes, and delivers to the bagging hopper, three separate grades of ice at an average rate of 200 pounds per minute. No buckets or chains to get out of order. For complete information on these or any units in the complete line of G-W ice equipment write your nearest Gifford-Wood branch office.

GIFFORD-WOOD CO.

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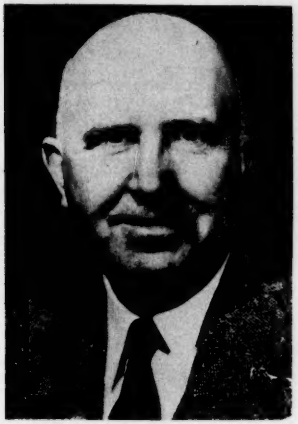
When You Think of Materials Handling – Think of Gifford-Wood

6388

Selling Ice for New Uses in Spotlight At Annual Ice Convention

THE 34th annual convention of the National Association of Ice Industries was held at the Shamrock Hotel, the showplace of the Southwest, at Houston, Texas, November 13-16, 1951. The dominant theme of the business sessions was selling—new markets for ice, increasing ice consumption for old uses, and ice-using appliances. Other features were the address by Senator Karl E. Mundt on the present and future politico-economic situation, one full session covering merchandising, the report of the Public Relations Department and an inspirational report on potential sales of ice for mechanical meat cases.



Wm. J. Ayers, Memphis, Tenn.
President
National Association of Ice Industries

According to a survey conducted by the National Association, ice sales for 1951 will show a further decline for the country as a whole, about five percent less than 1950, due largely to unfavorable weather conditions through the middle west and some eastern sections. Where weather conditions were normal, sales were generally normal. It was also noted that sales of processed ice showed little or no loss despite the unusually cool summer in many sections. Public acceptance of crushed ice and cubes continues on the up-grade with continued increased use by restaurants and hotels, for parties, beverages, vegetable and poultry icing.

The annual meeting of the Unit Ice Association secretaries was held Tuesday forenoon of the opening day of the convention. Reports were presented from the National Association and the secretaries.

An instructive display of hundreds of pieces of newspaper and magazine publicity on ice was shown in the convention hall, prepared by members of the Public Relations staff.

The exhibits were interesting and provided an educational feature all their own on the new equipment and machinery as well as ice selling helps available to meet the modern needs of ice manufacturing, distributing and merchandising.

The advertising program, because of lack of financial support, will be considerably curtailed for 1952. There will be no magazine advertising but magazine and newspaper publicity will be continued, supplemented by material for local advertising, and trade paper advertising.

Association dues for 1952 will be

Officers and Directors National Association of Ice Industries

Officers

President, Wm. J. Ayers, Memphis, Tenn.
First Vice-president, Paul H. Andres, Oklahoma City, Okla.
Second Vice-president, E. L. Gunn, Jr., Atlanta, Ga.
Treasurer, George Steers, Kalamazoo, Mich.
Executive Secretary, Guy W. Jacobs, Washington, D. C.

Executive Committee: Wm. J. Ayers, Memphis, Tenn. chairman; Harold McLain, Chicago, Ill.; Paul H. Andres, Oklahoma City, Okla.; E. L. Gunn, Jr., Atlanta, Ga.; R. J. Bailey, San Francisco, Calif.; P. A. Buehrman, New York, N. Y.; D. J. Copeland, Richmond, Ky.; Walter Blessman, Akron, Ohio; R. C. Muckerman, St. Louis, Mo.; J. C. Thompson, Dallas, Texas; George Steers, Kalamazoo, Mich.; E. F. Condon, Los Angeles, Calif.

Territorial Division Presidents

New England: Walter B. Chaffee, Providence, R. I.
Eastern: George M. Currie, Poughkeepsie, N. Y.
Southeastern: George Sherrod, Greensboro, N. J.
Great Lakes: H. L. Dithmer, Indianapolis, Ind.
Southern: Lee Gutierrez, Biloxi, Miss.
Southwestern: Walter McGee, Tulsa, Okla.
Western: J. R. Dean, Cape Girardeau, Mo.
Mountain States: Henry B. Nadorff, Denver, Col .
Pacific Coast, Paul Ashley, Fresno, Calif.
Northwestern: L. K. Davidson, Portland, Ore.

Directors at Large

Directors (to serve until 1954): W. J. Ayers, Memphis, Tenn.; Fred W. Beazley, Atlanta, Ga.; Walter B. Blessman, Akron, Ohio; P. A. Buehrman, New York, N. Y.; Paul W. Easton, Los Angeles, Calif.; R. G. Hadley, Hartford, Conn.; Allen Rushton, Birmingham, Ala.; Jacob M. Irvine, Dallas, Texas.

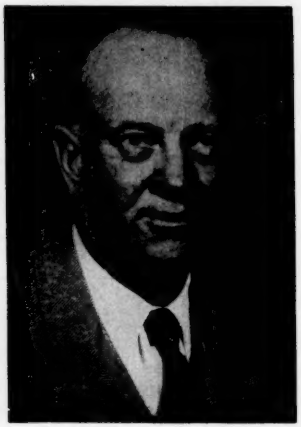
Directors (to serve until 1953): Paul H. Andres, Oklahoma City, Okla.; Paul Barbaro, Chicago, Ill.; E. F. Condon, Los Angeles, Calif.; H. J. Fairhead, Toronto, Ont., Canada; J. H. Hoffberger, Baltimore, Md.; L. A. Marsh, Portland, Ore.; Harold O. McLain, Chicago, Ill.; R. V. Sisk, Charlotte, N. C.

Directors (to serve until 1952): Clarence A. Adams, Denver, Colo.; R. F. Butler, Richmond, Va.; David J. Copeland, Richmond, Ky.; Samuel H. French, Philadelphia, Pa.; E. L. Gunn, Jr., Atlanta, Ga.; Wm. J. Lewis, Jr., Rochester, N. Y.; R. C. Muckerman, St. Louis, Mo.; J. C. Thompson, Dallas, Texas.

Past Presidents: Joseph Horner, Grand Rapids, Mich.; M. H. Robbins, Oakland, Calif.; E. L. Bennett, Somerville, Mass.; Lee R. Girton, Sioux Falls, S. D.; J. B. Mahoney, Charleston, S. C.; Wm. J. Rushton, Birmingham, Ala.; Guy W. Jacobs, Steubenville, Ohio; R. J. Bailey, San Francisco, Calif.; L. W. Dawley, Jackson, Miss.; George Steers, Kalamazoo, Mich.; J. Frank Rushton, Jacksonville, Fla.; M. J. Garvey, St. Joseph, Mo.; Harold O. McLain, Chicago, Ill.

the same as last year, 6 mills per ton, with a minimum of $25.

A full entertainment program was provided, starting with a "Shamburger Party" Tuesday evening along the edge of the beautiful Shamrock



H. O. McLain, Chicago, Ill.
Retiring President
National Association of Ice Industries

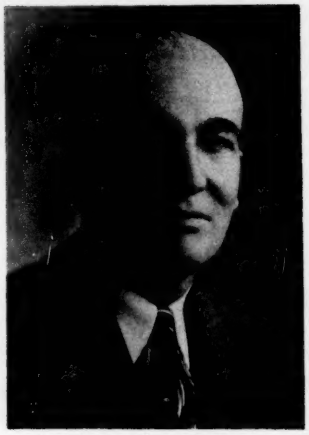
swimming pool where square dancers performed and the Ice Queen and Miss "Ice Cube" were crowned. Wednesday afternoon and evening, chartered buses carried members of the convention to the San Jacinto Memorial grounds where the USS Texas was open to visitors and dinner was served at the Jacinto Inn. Thursday evening the president's dinner dance, always the crowning event of the convention, was held in the beautiful Emerald Room of the hotel. After dinner, the inimitable Frankie Laine performed at the microphone with original songs and a style originated by himself. The hotel orchestra then provided music for dancing.

At the final session, a beautiful wrist watch was presented to Harold O. McLain, retiring president, as a symbol of appreciation for his two year's service as president. The presentation was made by E. L. Bennett, Metropolitan Ice Co., Somerville, Mass. who had served as president of the association in 1930-1932.

Have Faith in Freedom

As the final event, closing a most successful convention, a powerful appeal on the need for representative business men to take an interest and exert their influence in the political field was made by the Hon. Karl E. Mundt, United States Senator from South Dakota. Senator Mundt spoke at the Friday afternoon session. Unless they do take this interest, he said, the federal government gradually will usurp control and impose such regulations that their leadership and influence and control of their own business interests will be rendered ineffective.

The biggest challenge to American business today, he said, is whether the functions of individual liberty are going to be retained. The one cause Americans are all willing to fight for is freedom, and in country after country over the world these functions no longer exist. I, for one, he said, am not willing to concede that we are not going to continue to be the best country in the world by doing everything wrong politically.



Paul H. Andres, Oklahoma City, Okla.
First Vice-President
National Association of Ice Industries

Concentration of power in the central government, he said, leads to the loss of liberty as definitely shown by the careers and aggressive tactics exerted within their own countries and on outside countries by Hitler, Mussolini, and Stalin.

The political controls now in existence in America are imitations of efforts that have failed abroad. He urged the members of the audience not to be free men with little faith, but aggressive and working and fighting for the principles that have made America great. Better, he pleaded, to preserve the formula of tried and proven successes than formulas that can lead only to failure.

There are two factors at work in Washington, he said, one leaning far to the left and the other far to the right. The most successful way to continued freedom will be found in the path between these two extremes, adapting the political program to practical needs of the day. He reminded the audience that every citizen is provided with a workable plan to have the government they want to have and that is by conscientious voting at the polls.

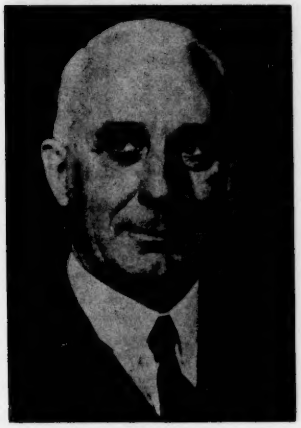
Opening Session

THE convention was opened Tuesday afternoon in the Emerald Room of the Shamrock Hotel. Harold O. McLain president of the association, presided. A list of members deceased during the year was read. This list follows:

C. F. Anderson, Oklahoma City, Okla.; Stanley Baker, Victoria, B. C. Canada; L. B. Barber, St. Louis, Mo.; J. L. Blackwell, Vicksburg, Miss.; Lou W. Collins, Kalamazoo, Mich.; James Cullen, Cincinnati, Ohio; Edward H. Culliton, Sr., Buffalo, N. Y.; Henry M. Da Vega, Charleston, S. C.; Albert L. Ewing, Seattle, Wash.; W. Paul Faulkner, Lubbock, Tex.; Leo A. Fretz, Pontiac, Ill.; George W. Glover, Vincennes, Ind.; Charles Harding, Sturgis, Ky.; Paul P. Harris, Laurinburg, N. C.; Howard W. Haupt, Akron, Ohio; William E. Herb, Hudson, N. Y.; Napoleon B. Jackson, St. Petersburg, Fla.; Edward G. Kellner, Buffalo, N. Y.; J. B. McAfee, Pittsburgh, Pa.; Henry L. McCloy, Philadelphia, Pa.; John C. Muckerman, St. Louis, Mo.; Lindsay A. Nickell, Jr., Columbia, Mo.; Willshire Riley, Atlanta, Ga.; William S. Shipley, York, Pa.; William W. Simmons, Sr., Memphis, Tenn.; Herbert G. Terry, San Antonio, Tex.; Norbert Thompson, Key West, Fla.; Arthur A. Wallace, Boonville, Mo.; Clement B. Wissing, Vincennes, Ind.; A. M. Yard, Clovis, N. M.; John F. Zilisch, Milwaukee, Wis.

E. L. Gunn Jr., Atlanta, Ga.
Second Vice-President
National Association of Ice Industries

Convention members and guests were welcomed to Texas and Houston by General P. A. Weatherred, secretary-counsel of the Southwest Ice Manufacturers Association. General Weatherred recalled that he had been closely associated with association work in and with the ice in-



George Steers Jr., Kalamazoo, Mich.
Treasurer
National Association of Ice Industries

dustry for more than twenty-five years and that this was the twenty-fifth National ice convention which he had attended.

He reviewed briefly the accomplishments and some of the failures of those twenty-five years and said that such a review was valuable in that it provided a guide to the future. Uniformity of the product makes possible cooperation within the ice industry that is not present with other industries. So widespread are the uses for ice that the industry cannot keep from going ahead. Breaking through any tendency toward pessimism, General Weatherred then painted a favorable picture of the possibilities of the future of the ice industry, and advised that the middle road between over-optimism and pessimism was the road that would lead to success.

The Exhibitors

An expression of appreciation to the exhibitors at the convention was presented by Jacob M. Irvine, Dallas, Tex. Mr. Irvine said that in these exhibits would be found the newest and most modern machinery and equipment to help make and sell ice. He advised members of the convention that they could not afford to miss these exhibits and get the new ideas available there. The ice industry needs these new products and new ideas, he said, and they should not be neglected.

Financial Report

The financial report for the year was presented by George Steers, treasurer. For the last two years, Mr. Steers reported, the association had operated at a deficit. But there had been sufficient reserves to make it possible to function on a normal basis. During the year, the association had spent a considerable sum in litigation connected with the sized ice suits in all of which the association had been successful. Lack of industry support of the Public Relations program necessitate changes in the budget, but some commitments had already been made which it was impossible to change which resulted in a considerable deficit. In this case also there are sufficient reserves to finance an advertising program next year on a reduced scale.

Mr. Steers reminded members that it costs more now to operate the association than it did a few years ago, and in addition more activities required by the members means that before long increased revenues will be a necessity and this most likely would resolve itself into increased dues. The association he said, cannot continue to draw on its financial backlog until this resource is depleted to a point beyond safety.

The National Association

Reporting for the executive staff of the National Association, Guy W. Jacobs, executive secretary, said they had put their best efforts into building a program beneficial to all members and he believed they had succeeded.

Tonnage for the industry as a whole, he reported for 1950 was slightly under 34 million tons, a drop of 18 per cent compared with that for 1949. Sales of processed ice, however were nearly 4 million tons or only 4½ per cent less than the previous year. Results of the preliminary survey for 1951 indicate that it will show a futher decline of approximately 5 per cent. In this connection, he said it is encouraging to note that in those areas where summer temperatures were up to normal, tonnages held their own and in some cases increased. This means, he said, that processed ice sales tend to hold their own in spite of low temperatures, and this means that here is a market for ice men to go after.

A significant development during 1949 and 1950 is the increase in the number of ice companies offering processed ice service. That total rose 15 per cent during this two-year period. Over 70 per cent of the companies on the Pacific Coast now sell ice cubes. In New England 73 per cent of all ice companies supply crushed ice. This illustrates the overall transition in the ice industry toward meeting the growing demand for ice in prepared form. Much of the demand comes from domestic users, who appreciate the convenience of being able to pick up extra ice cubes, crushed or sized ice for their parties, picnics or other special occasions.

Touching on research, public relations and other association activities, he said actual results can only be obtained if the individual will follow through on a local level. Local ice companies, he emphasized, must conduct their own public relations in their communities and maintain a constant merchandising and selling program.

Keynote Address

The keynote address of the convention was delivered by Harold O. McLain, retiring president, who talked on the responsibilities and opportunities of ice men in their business and as citizens. Mr. McLain reminded

Guy W. Jacobs, Washington, D.C.
Executive Secretary
National Association of Ice Industries

his audience that the ice industry is not alone in being afflicted with competition and obsolescence. Most industries, he said, have certain specific advantages over others and the ice business has this advantage in that ice provides higher quality of refrigeration than that furnished by its competition, and it has opportunities

Ice Queen and Miss Ice Cube Honored at Shamburger Party

Miss Billye Jean Taylor, Houston was acclaimed Miss Ice Queen of 1951, Tuesday evening at the ice convention. Miss Marilyn Timmons 3½ was named "Miss Ice Cube." They stand in front of a 3,000-lb. ice throne of crystal clear ice erected at the edge of the Shamrock's swimming pool. Miss Taylor is a former University of Houston co-ed, and Marilyn is the daughter of Mr. and Mrs. Francis X. Timmons. Mr. Timmons is publicity director of the Ice Association.

in new markets constantly being opened which are limited only by the ingenuity of the individual ice man.

Not only in business but in their daily lives, he said, they must be alert to the importance of being good American citizens. Further dilution of the American way of life, especially if threatened from within, and from subversive legislation, is one of our big problems in public life today. We now have a national debt that is larger than all the European countries combined, taxes are approaching the points of confiscation, and we are told they will be higher.

One of the most potent forces of inflation is the esculator clause now used to determine wage scales in many industries and this only serves to raise the price of commodities and squeeze the middle income group in a tighter grasp. He said the national practices of unlimited foreign spending is also dangerous. It is up to us the citizens, he said, to force the government to recapture the high ideals of necessity and integrity. The time is growing short for us, as American citizens, to appreciate the seriousness and apply ourselves sincerely to this increasingly important problem.

Second Session

THE Wednesday morning session was conducted by E. F. Condon, Los Angeles, first vice-president. Mr. Condon said that improvement in the ice business could come only from individual efforts and he warned his audience that unless they made sufficient effort to sell more ice during the coming year, they could well appear at the next annual convention to hear a report of still further decline in tonnage. He called attention to other industries, the movies, for example which are facing dangerous competition, but most of them have united to meet their problems and the ice man can do likewise. He said it was essential for them all to work with others in their area and to do their best to get others to use the advantages of the National Association.

The Ice Future

Millard W. Young, San Francisco, Calif., said he and most of the others had seen the ice industry in depressions before, and had also seen it come up out of its depressed state and up to recovery. The way to business recovery, he said, is to use the old and tried formulas along with the new ideas that had been developed for the sale of ice.

Drawing a moral from the old story "Acres of Diamonds" in which a land owner returned from wandering to find a diamond field on his own land, he said that many ice men could find the elements of business recovery in their own ice company. The ice industry, he said, has, in itself, the necessary elements of success and the thing to do is to keep searching for the way to do it. One trouble is that most of them are not trying in the right way, but it is an established fact that all those who make a sincere effort are doing a good job. The future of the ice industry is in our own hands. Lets not say that we have done everything possible to make our business a success until we have.

Ice Research

A report on the work and future program of the Research and Engineering Department was presented by Leonard L. Swartz. Mr. Swartz explained that during the year the research department had taken over the work of keeping up with government regulations on material and equipment which had reduced the work on research. Regarding these materials, he said, most industries are bothered with shortages, but in the ice industry practically all materials for essential work have been approved. However, shortages will continue and all those who have the need for rehabilitation or repair work are advised to start working toward getting the necessary approval for material.

Research work had been continued on the most significant projects. One of these was icing sweet corn for the local market on which studies had been showing conclusively that ice helps retain the quality and that retailers are willing to pay a premium that will more than pay the icing costs. Grocers also are pleased because they get a higher price and can sell more corn.

Another project during the year was that of encouraging the use of crushed ice in mechanical meat cases. The association and the Union Ice Company had sponsored a study at the University of California on this

subject with surprising results. Icing of dressed poultry also had opened a big market for ice and much of this market he said, is still in the future.

A study on ion exchange also is being made to determine the actual value of this water treatment. This study was being underwritten through the Calcium Chloride Association, the Industrial Equipment Association and the University of Texas. It will run for two years and arrangements are being made for preparation of a manual on the subject.

Regarding the program for next year, the entire agricultural program on hydro cooling will be continued and expanded to include other fruits and vegetables. Also the use of ice in mechanical cases for fresh vegtables, use of ice for the display of flowers, machines for making ice cubes. Following up the study of ice vending stations made in Pennsylvania, more information is to be gathered on other ice vending topics such as size of package, what the ice is used for and servicing trucks. This program, Mr. Swartz explained, exceeds the budget, but they hoped to interest cooperating agencies sufficiently to carry it through.

Retail Meat Icing

R. W. Davis, San Francisco, has done much to spearhead the drive for new business through icing mechanical meat cases. He gave a very practical talk on that subject and said that using ice for this purpose is not new since it was started about eighteen years ago by the Peoples Ice Co., Syracuse, N. Y. where a large tonnage is being sold for that purpose. However, very little attention has been paid to it by other ice men and they are thereby neglecting a very prolific field for the sale of ice.

It is an established fact, he said, that a large number of meat retailers are operating in the red. If they could save one or two per cent of what is normally lost through shrinkage or drying out, trimming and spoilage, it would mean the difference between making a profit and doing business at a loss. The use of ice, it has been demonstrated, will accomplish this purpose, he said. Tests to determine the amount of benefit from such icing have been conducted throughout the past year at the University of California under joint sponsorship of the Union Ice Company and the National Association.

Identical cuts of meat were placed in two display cases, one case mechanically refrigerated only, the other mechanically refrigerated and stocked with crushed ice, on which the meat rested. Beef roasts, steaks, ground beef, pork roasts and chops were used, and all meat samples were carefully paired. The temperature within both cases was kept at the same point (about 35 F), leaving the relative humidity as the variable. Color changes were recorded by means of Kodachrome pictures.

Board of Directors, National Association of Ice Industries in session at annual convention, Houston, Texas.

A series of experiments were run, and in every case the meat displayed on ice lost less weight, remained brighter and moister than meat in the uniced case. Trimming was frequently necessary for the uniced meat, never for that on ice. The loss of weight in the "dry" meat was as high as 6.3 per cent in 88 hours. The ice produced a humidity of 85-90 per cent, while humidity in the other case reached a high of 65 per cent after defrosting. Beneficial effect of the higher humidity was progressively more apparent.

Meat stored in a mechanical case after the end of 113 hours showed 14 per cent loss of weight as compared to 4.8 per cent for the case in which ice was used and the meat in the ice case was still excellent while that in the mechanical case was dry. In eight hours, loss in a mechanical case was 4.3 per cent as compared to 1.9 per cent in an ice case. Summing up, he said, ice offers the following advantages: decreased loss in weight and no trimming, no spoilage, no markdowns, no trouble, saves labor, a total average savings amounting to 9 per cent in volume and with ice in the display cases, shoppers can be sure that goods which have been on display from a few hours to three days or more, will be in top condition at the time of purchase. Regarding the potential market, he said in the United States there are 247,904 meat markets. Meats offer a market for approximately one ton of ice, making a total potential market for more than 3½ million tons of ice.

Stabilization Program

A discussion on the stabilization program for the ice industry was presented by Hal Leventhal, Chief Counsel for the United States Office of Price Stabilization. Mr. Leventhal said that although it was inconvenient at times, price and wage scale control has become necessary as a part of the general mobilization program. The government is now spending for security around 41 billion dollars and next year this amount will be increased to about 65 billion. This necessitates allocation of materials because there will not be enough to go around. This huge spending of government money will still further create a shortage of goods and add to the forces of inflation.

This inflation, with its insistent upward rises in prices, living costs, wages, chasing each other upward endlessly, is a danger second only to armed invasion. And the danger is not solely economic. When inflation corrodes the economic structure of a country, it sows dragon's teeth in the form of violent political movements. The experiences of Germany and China in the last generation underscore the lessons of ancient history.

The security and defense program is necessarily expensive. This stream for money in the economy greater than the goods available at normal prices means tremendous inflationary pressures. Inflation would mean the hardships of rising living costs, ever rising government expenditures and

deficits. Inflation would mean an American dollar whose worth was whittled away while we watched. The government's attack upon inflation must be many-pronged and includes increased taxation, curbing credit expansion not related to defense security, elimination of unnecessary spending and providing increased savings.

The actions of OPS in regard to the ice industry show how the ceiling price program is administered flexibly, taking into account the major problems of an industry. The general freeze was clearly unfavorable as an enduring regulation for ice, since it froze sellers at the low seasonal price. Our general manufacturer's regulation (CPR 22) was also inadequate. At the end of July we issued Supplementary Regulation 45 to the General Ceiling Price Regulation. That provides individual adjustments for hardship cases, if you are in a loss or operating at such a low level of profit as to endanger your business. Depending on how broad your own operations are, the case is handled in an OPS District Office or in one of the thirteen major regional offices. We have issued processing instructions to our field offices and have instructed them to act with utmost speed on these cases.

Although Mr. Leventhal stated he was not as intimately acquainted with the regulations of the Wage Stabilization Board, he said that board has likewise developed a series of rules that are fair yet permit effective stabilization. The board has general standards permitting an employer to compensate for the rise in the cost of living, a rise of 10 per cent since January 1950, plus a wage adjustment of 2.8 per cent for the period since last January. There are some corrections of inequities, like different job rates in different plants and industries.

Third Session

THE third session Thursday morning was opened by Wm. J. Ayers, second vice-president. Report of the nominating committee naming directors of the association was presented by O. A. Reardon, Alexandria, Va. These directors, also the officers elected at a later session, are listed on the front page of this convention report. The balance of this session was used for the Merchandising Forum.

Merchandising Forum

Paul H. Andres, chairman of the Personnel and Marketing Department, presided at this very interesting session in which a number of very practical talks were made by members of the ice industry reporting on their own merchandising activities.

Opening the session, Mr. Andres said they had planned this program for the purpose of presenting information that other ice men can and will use in the marketing of their product. For too long, he said, the ice industry has practically ignored the necessity of merchandising and building for the future. Today with falling tonnage, merchandising efforts remain about the same and advertising is declining. What is needed, he said is for the ice industry to become more interested in a practical overall program that will result in the selling of more ice. He hoped that in the presentation which followed, this result would be fully accomplished.

Sweet Corn Icing

Robert W. Walton, secretary of the Indiana Association of Ice Industries, told about sweet corn icing in Indiana which had been very profitable to the ice business operating in the corn growing areas. This program started in 1941 in cooperation with Purdue University conducting research and demonstrations on the improved quality and flavor of sweet corn when iced soon after harvest and kept iced until purchased by the consumer.

Results of this demonstration caught popular interest among chain stores, city markets and even the smaller grocery stores. Last year a large grower at Flat Rock, Indiana planted 300 acres of sweet corn, all of which was iced and the same year another grower spent several thousand dollars for icing equipment.

A pormal crop of sweet corn, he said, is about 600 dozen ears per acre and about 1½ tons of ice are required per acre. Last year, the association purchased and distributed paper bags especially designed for the purpose and these were all disposed of promptly. Mr. Walton said these experiments and demonstrations have shown that there is an enormous potential market for ice for this purpose because it improves the flavor, increases public aceptance and commands a premium price that will pay for the ice used.

John H. Glenn, Beardstown, Ill., talked on poultry icing. This is an excellent field for selling ice, he said, because the poultry packing industry is growing, and shows an increase every year. The ice industry fits beautifully into this picture by providing ice not only to remove the body heat at the packing plant but also to preserve the birds after they have been dressed. Dry cooling, he said, takes about ten hours to bring the temperature down to 36 degrees and there is a shrinkage of about 1 per cent. With ice water they can be cooled in about three hours.

Poultry packers are interested in ice because it provides better appearance of the product, better keeping quality, and it adds moisture and enhances the cooking quality. Department of Agriculture figures report production of about 1600 million pounds of poultry with potential sales of 1,672,000 tons of ice. Dressed turkeys also offer a big market he said, the present potential being two million tons of ice. Broiler plants are increasing in poultry growing areas. He suggested that ice companies who wanted to get into this business, make a survey of their territory, listing the poultry processing plants and then contact them and tell them about the advantages of ice. They should also contact their farm advisor and talk to him about the possibilities of starting a broiler project.

Appliance Selling

Harry C. Conklin, Jr., Charleston, S. C., talked on appliance selling. The merchandising and selling of ice-using appliances, he said, is a necessary adjunct to any ice business and will be for a long time to come. The manager must first do a selling job to the employees so thorough that they know its qualifications and believe in the value of ice refrigeration.

His company each year holds a school for the service man in which they are taught how ice is made and its peculiar advantages. For this school, they have used the materials and information furnished by the National Association. For the last three years, they have held a sales contest in which cast prizes are awarded for the best sales records. This has paid for itself handsomely as shown by the following records. In 1949 appliance sales amounted to $12,534 compared to $12,460 in 1948. In 1950, 232 units were sold with a value of $13,519. In 1951, 285 units were sold with value of $14,214.

George W. Heath, Madison, Wis., talked on selling ice through vending stations. His company started with installation of a vending station for a small dealer and they now have thirteen stations, seven of which are in Madison. Their experience has convinced that that there is a definite place for vending machines in selling ice. Location is very important and they have had to move some of their stations to better locations. Through highways ordinarilly pro-

vide the best locations. The amount of ice sold varies, but typical sales of both block and processed ice would run about 200 to 300 tons per year. Another point in their favor is that they sell more crushed and cubed ice. Properly installed, painted and illuminated, they also serve as a splendid advertisement. His company likes the vending ice idea and plans to install more such stations.

R. W. Davis of San Francisco, Calif., talked again on selling ice for mechanical meat cases. Mr. Davis said they had prepared 35 records of interviews of meat retailers answering questions on the merits of ice for this purpose. These records and also a series of bulletins designed for meat retailers have been used by Union Ice Co., salesmen in promoting this business. They usually call on the smaller groceries first, offering the first icing free, and a representative of the ice company sets up the display. A temperature of 36 to 38 F. supplies moisture from the melting ice, and is the right temperature for holding the meat. It is possible for smaller grocers to have as complete a display as the bigger stores. In the territory served by the Union Ice Co., they now have about 300 meat markets using ice regularly and they have a large list of prospects to most of whom they expect to sell the icing idea.

Final Session

THE fourth and final session was held Friday morning with Harold O. McLain presiding. The advertising accomplishments of 1951 was presented by E. L. Gunn, Jr., chairman of the operating committee of the Public Service Department.

Mr. Gunn reported that the greatest coverage ever achieved by advertising messages for ice men was acomplished during 1951. The total net circulation of all ice advertisements was 145,465,644. It was done a bit differently this year from past years, smaller space wtih greater insertions, although 34 advertisements were placed in national consumer magazines. In trade paper advertising, 111 advertisements appeared in the major produce, beverage, grocery, restaurant and hotel publications with circulation of 2,544,978. In exhibits, ice was displayed at conventions of food stores, public health associations, grocers, home economics, a total of twelve exhibits.

This was a tremendous advertising program but fund raising fell short of its expectations and as a result, some of the program had to be curtailed. And for 1952 there will be no national and consumer advertising of ice. This was the decision of the board of directors after much study and review. It is hoped that those companies which normally subscribe to the ice public relations program will turn their efforts to local advertising.

The Public Relations Department will remain intact except that combined with it will be a new department called "Public Information and Marketing," the work of which will be under the direction of Francis X. Timmons and his assistant, John Pool, Jr. The Public Relations program will retain trade paper advertising, distribution of the film, "Naturally Yours", and sales literature, exhibits, presentation of ice at various exhibits and ice publicity in magazines and newspapers.

Mr. Gunn announced that the Operating Committee of the Public Relations Department had been dissolved, and he paid special tribute to George Steers, T. J. Beck and Charles Silvert who had served with him on this committee for several years. Mr. Gunn expressed his regret at the abandonment of the ice advertising program which he thought had brought excellent results and said he was sure that ice men generally throughout the country will realize that contrary to not being able to afford national advertising, the industry cannot afford not to advertise.

Public Relations

Public relations through the publisher's eye was discussed by Robert M. Feenster, chairman of the executive committee of Dow-Jones Company, publishers of the Wall Street Journal. Mr. Feenster said the purpose of public relations work is to attract the thinking of people toward the business or group for which the work is being done. Public relations is much bigger than getting articles in newspapers and magazines because it involves all attitudes of the public.

For the ice business, he suggested, the important elements are appearance, serving customers and the type of personnel. On the local level, he said, the ice company manager should know and be able to work closely with his newspaper publishers, editors and reporters and advertising men. He suggested that someone be authorized who was able and willing to talk to the press and recognize what they are interested in. He suggested that they see that newsworthy items got to the paper but warned them against propagandizing because the newspaper will not use such propaganda for the reason that they know their readers would spot it immediately as phony. Don't lie or threaten or rely on cocktail parties. Don't play favorites. Don't be touchy about what is printed.

Regarding National Public Relations, he said the publicity department of the National Ice Association had done a good job. Articles and publicity, he said, don't just happen, they have got to be worked for and this means more work probably than the average person realizes.

A Banker Looks at the Ice Business

Paul E. Belcher of the First National Bank, Akron, Ohio, gave a prepared address on current business conditions as they affect the ice business. The ice business is not the only one faced with the problems of declining sales and tough problems. He reminded his audience of the movies and railroads, both of which have serious competitive problems. The ice industry is stuck with conditions as they exist and the only thing that can be done is to cope with them. He advised them not to waste too much time trying to regain markets they have lost because they can make greater gains in going after standardized and new uses of ice. Research in the ice industry, as it is in all industry, he said, is the main spring of progress, but if research turns up a new market, it must be advertised and merchandised at the local level, otherwise all of the work that has gone into it will be lost.

The ice industry has no valid reason to believe that it is a dying industry, he said. Ice is vitally essential to civilization. The higher and the more complex our civilizaton becomes, the more ice will be needed. The use of ice will be more responsive to the advance of civilization than it is to population increases. All realize the close relationship between ice tonnage sales and population growth.

Sales effort must keep pace with changing demands and conditions. Time will not be turned backwards. The ice industry must keep pace with progress. It must ascertain how its product fits into tomorrow's world. Naturally, ice sales will vary with weather, the seasons, the trend of population, and with crop successes and failures. But it must be made an expanding industry marketwise. That means development of new and better uses for your product. It can be done.

Don't underprice your cost of production and sales in expanding new uses. The ice industry can only sur-

vive if it makes a profit. There is a limit beyond which new forms of ice cannot be sold at a loss in the belief that the loss can be changed to advertising. You are also a part of the general economy. You are bound by it as is everyone else.

Speaking on the general economy, the speaker said the future of business, in fact, of our entire economy, is pretty well tied up with the prospects for real world peace. We cannot hope to avoid increasing tax burdens, more extensive economic controls, a garrison state, to name only three consequences, as long as the threat of war casts its shadow over the land. A realistic appraisal of the outlook is not particularly reassuring.

It is easy to persuade one's self that peace can be negotiated because we so want peace. But peace is not a unilateral undertaking. Without Soviet concurrence, our fondest hopes represent no more than wishful thinking. It is hard to believe what reason tells us even though we look upon every communist move with suspicion. We continue to endow the Kremlin with Christian ethics when we know it is not guided by Christian principles.

Optimism has its virtue, but not if it masks the true significance of major world events. A truce in Korea, should one arise, must not be mistaken for peace. Nor should the empty protestations of top communists be taken too seriously. Only when their actions and their words speak the same language are we warranted in giving credence to their words. This must be our attitude despite the pious and hopeful expressions many of our governmental representatives frequently make.

Inflation and higher price levels will gradually develop not only because of the necessity for greater private and public borrowing but also because all added business costs must be passed on to the public in higher prices.

Report of Board of Directors

A report of the board of directors presented at this session announced the election of officers for the coming year, as listed on the first page of this report. It was announced that association dues would remain the same as last year, 6 mills per ton with a minimum of $25. The 1952 convention will be held in Cincinnati, the date and headquarters hotel to be announced later.

The Personnel Training and Marketing Department it was officially announced, has been reorganized under the name "Public Information and Marketing" and joined with the Public Relations Department, the work of these two departments, to be handled by Francis X. Timmons and John P. Pool, Jr., under the direction of George Steers, chairman of the Public Relations Department. Another change in this department was the discontinuing of the activities of the Operating Committee.

Advertising Accomplishments – Report of the Public Relations Department

E. L. GUNN, JR.
Public Relations Department
National Association of Ice Industries

THE greatest coverage ever achieved by advertising messages for icemen was accomplished this year. I realize that not everyone who buys a magazine sees our ads, but at least the potential is there. The more traffic that passes a store, the greater the chances are for its success. The same idea is true of an advertisement!

Therefore when I tell you that the total net circulation of all Ice ads was 145,456,644, you can appreciate how your money was invested. It is safe to assume that a large percentage of your customers saw at least one message urging them to "pick up extra ice for the party, or picnic, or homemade ice cream" and so on. There is a better reason to believe that they were seen, because magazines claim an average of three readers per issue sold. In other words, it was possible that over 436 million people had an opportunity to see our advertising in 1951.

We did it a little differently this year from past years; smaller space with greater insertions, 34 ads were placed in national consumer magazines. Only three full-color, full-page ads were purchased. With one of them we hit the jackpot. In fact, it was sensational! I refer to the ad in Esquire—"Want To Have A Party, Mister?" In competition with thousands of ads of all types in all media, it was selected as "the ad of the month" by one of the leading advertising publications in the nation, Tide.

Life, Saturday Evening Post, Collier's, Better Homes and Gardens, Esquire, Good Housekeeping, Ladies Home Journal, Woman's Home Companion, Time, McCall's — all carried ice advertising. Nancy Sasser's "Buy-Lines" proved very successful in view of the number of requests for "Money Saving Tips on Marketing" that were received.

You've all seen the ads. Strictly from an aesthetic viewpoint, your Operating Committee is proud of the campaign. The advertising agency, Donahue & Coe, did a magnificent job in our behalf. Their staff loyalty and efforts to present our product to the public are deserving of a "thank you" from every Iceman.

To tie-in with national advertising, mats, layouts, copy, radio commercials, and ideas were offered members and PR subscribers. Many companies availed themselves of this material. Good use was made of it.

Trade Paper Advertising

One hundred and eleven ads appeared in the major produce, beverage, grocery, restaurant and hotel publications. Circulation was 2,544,978 which just about blanketed the fields of commercial Ice users. For grocer publications, testimonials were employed to dramatize the increased profits made possible when poultry, meat, fish and vegetables are displayed on ice. In reaching the fountain-restaurant field and hotel business, a unique advertising idea developed by your Public Relations Department was carried through.

Iced Tea Publicity

The Tea Bureau co-operated in getting testimonial of restaurants on their use of ice in iced tea. The "2-ounce formula" (2 ounces of tea to a gallon of water) in making iced tea really produces a better tasting drink when iceman's ice is used. All of you have seen the ads which were displayed on opposite pages of the trade papers. Reaction of the trade has been most gratifying. The tea boys are pleased. The iceman who tied-in locally—from reports reaching us—fared exceedingly well.

Another phase of our co-operation with the Tea Bureau was the production of ice truck posters. Close to 20,000 were displayed this year. There was no cost to icemen other than the small shipping charges. We expect to continue this offer next year. This is such a good deal it is surprising that some ice companies failed to take advantage of it!

Presented at 34th annual convention National Association of Ice Industries.

Exhibits

During the past fiscal year we have given thousands of businessmen and home economists firsthand information on iced vegetables and various ice appliances. Ice has been displayed at the following exhibits: National Association of Food Chains, American Public Health Association, Vegetable Growers Association, United Fresh Fruit and Vegetable Association, National League of Fresh Fruit and Vegetable Distributors, National-American Wholesale Grocers Association, Long Island Agricultural and Technical Institute, Super Market Institute, National Association of Retail Grocers, American Home Economics Association, Piggly-Wiggly Corporation, Independent Grocers' Alliance Distributing Company.

Educational Literature

Since the beginning of our 1951 fiscal year, the Public Relations Department has mailed 184,188 copies of various ice educational literature. In view of the fact that little mention of available material has been made —except for some outstanding publicity, this is an excellent consumer response.

Replies to coupons in The Grade Teacher, a magazine for grade teachers and students, headed the list. Close to 100,000 booklets and folders were sent to teachers—44,000 modern trends folders on fish, vegetables and poultry; and 51,534 reprints of "The Story of Ice."

Additional copies could have been sent out, but budget limitations necessitated the reduction of some large individual requests. Some teachers and principals ask for as many as 500 pieces! Large requests like this are referred to local ice companies who —in some instances—are willing to purchase enough to supply a school, church, or other similar organization.

Nancy Sasser's "Buy-Lines" were the biggest single puller of advertiser-created response. Thousands of booklets were asked for by these magazine readers. As the result of one bit of publicity in TODAY'S WOMAN magazine, over 2500 "Money Saving Tips" booklets were requested and sent out. Only the August issue made mention of the ice booklet!

Information in Trade Paper Advertising

Through trade paper advertising we offer such information as "Hydro-Cooling", "When It's Cold There's Gold", and pertinent facts on poultry and meat icing. We have also supplied many ice companies with bulk orders for local distribution. These thousands are in addition to material passed out by the Association.

Now that I have touched on the highlights of advertising activities, there is another aspect of our national consumer and trade advertising that calls for explanation:

Lack of Funds Curtails Program

True, we've had a tremendous advertising program, but fund raising fell short of our expectations. As the summer months went by, it became apparent that the iceman wasn't in a position to pay for all the ads that had been planned. Unlike the national debt, which seems to grow and grow, sound economy doesn't permit an association department to spend more than it takes in.

So, to keep the budget in line with income, as much as possible, and yet maintain faith with those who subscribed to the PR Program, a few ads were canceled in consumer and trade magazines. This was done by lopping off one insertion of each of the five big circulation publications and several of the trade papers. This way a great deal of money was saved without hurting the advertising too much. There may be some who feel that even more advertising space should have been cut; however, that is easier said than done. National consumer magazines close three months prior to publication date. With full-color ads, as compared to black-and-white, even more time is required to "stop" an ad from running. Fortunately, we were able to drop one full-color, full-page ad in Life magazine at a saving of $24,280. The total amount we were able to save was $40,895.97 on both consumer and trade publications.

No Consumer Magazine Advertising in 1952

This information serves as a prelude to what may seem a startling announcement. In 1952 there will not be any national consumer magazine advertising of Ice. I have been requested to tell you that this has been the decision of your Board of Directors after long study and review. Please note that I refer to the year 1952. What happens after that is strictly up to you and the rest of the ice industry. Perhaps we can get by on the advertising momentum that more than five million dollars worth of magazine space has built up over the last 15 years. That, too, remains to be seen.

To some this may not be news. Many could see the handwriting on the wall—two cool ice seasons in a row. True, in many areas ice business has been very good this year. Perhaps all we need is another hot summer to put us back on our feet. On the other hand, there are Icemen who sense the great need of the industry for steady, hard-hitting advertising to keep the public sold on ice. It is hoped that those companies which normally subscribe to the Ice Public Relations Program will direct their efforts into local advertising. There is much assistance that can be obtained from the new department which has been authorized by the Board of Directors.

New Department Formed

In a sense, the Public Relations Department will remain intact, except that the work of Frank Timmons and his able assistant, John Pool, will change slightly. Both of them have had wide experience in merchandising. Therefore, they will continue sending out news releases to all media, keep up their contacts with editors, maintain their contacts with advertising and PR heads of other industries, and continue preparing local ad-helps and direct-mail material for local distribution, etc. In addition, they will function under a new department which will involve Merchandising. It will be called Public Information and Marketing.

Of course, their activities and the efforts of the entire Association will be reported in the interesting new association bulletin, "Naii Ice News." We hope to continue that bulletin on a regular issue basis. For the time being, the department will be run on surplus PR funds.

By now, you must be aware that there will not be a drive to raise funds for the Public Relations Program. At least you won't be asked for any money this year, and that should be somewhat of a relief to you, as it is to me!

Other Activities

Now, the Board feels that to drop trade paper advertising when we have so many new uses for ice—as reported by the Research Department —would be a grave error. Funds have been allocated to continue a limited trade magazine schedule to promote vegetable icing, meat and poultry icing, hydro-cooling, beverage icing, and ice for growers and shippers. From time to time you will be informed as to the progress of this campaign.

We will also continue to distribute our film "Naturally Yours" and in a limited way, within a small budget, provide literature upon request from people who will put it to good use. You realize that we still have ample quantities of booklets and pamphlets to last for a while.

Another activity that will not be side-tracked is representation of ice at various exhibits. Some may be curtailed, but the most important ones will find the iceman very much in evidence.

Let me go back for a moment to a subject that may have created a doubt in your minds. If we are not a national advertiser, how can we expect editorial comment in big circulation magazines? Our publicity director, in the past two and a half years, has become acquainted with a great many editors on a personal basis. He is of the opinion that whether an industry advertises or not, a good idea or a smart story is always of interest to editors. Editors jealously guard their right to pick and choose what is to run in their

pages. When a personal visit is made to a writer's office at no time is the fact that the ice industry is advertising in that publication mentioned. In the majority of cases, to do so would be like the "kiss of death" to any idea for an article.

When you hear the report of our publicity success, take note of the many publications which have used ice publicity material. The majority of them have carried no ice advertising. The National Association does no newspaper advertising, yet with each succeeding year items of ice uses—picnics, parties, homemade ice cream, vegetable icing, meat icing, etc., increase in circulation. We do no radio advertising, yet the same holds true. You'd be surprised how often we get requests from columnists for additional information on our preliminary releases that are mailed out.

Up to this time I have been telling you all about what has been done and what we intend to do in the coming year. In short, as Chairman of the Operating Committee, I have made a report. You may not be aware of my position today. Let me take a few more moments of your time to speak freely of the thoughts that run through my mind.

Operating Committee Dissolved

For seven years I have had the privilege of serving as Chairman of the group which has done the "leg work" in setting up advertising campaigns and supervising the activities of the Public Relations Department. Frankly, I don't know when I'll have the opportunity to speak to you again in this capacity, for the Operating Committee as such has been dissolved. It is with mixed feelings of pride and regret that I tell you this. Walter Blessman, Tom Beck, Charlie Silbert, and the Public Relations Department Chairman, George Steers, who sat in on our meetings, have served you well. I feel they deserve a round of applause for their efforts!

My pride is tinged with regret—regreat that our work must stop. I feel strongly about this phase of ice selling.

Advertising can do just one thing. It can induce people to try a product once. When the product is used or consumed by a person who lays money on the line for it, it is on its own. No gimmick, fancy slogan, beautiful four-color ad, is going to make a repeat sale if the product doesn't measure up to the user's expectations.

Another point; It takes the money of more than one person—in the majority of cases—to back a product to the extent that a national advertising program can be purchased. It takes stockholders as well as the company president's hard cash to pay for magazines, radio, and other forms of advertising space and time. If you, as an individual, take a notion to invest money in a company or product, aren't you going to look into the efficient function of the management and the standards of quality that go into the item for sale? You bet you are!

Before an industry gets to the point that it can put the brand name of its product before a nation as big as the United States, it must withstand the test of satisfying the discriminating tastes of each litle city, then a state, then a region. Finally, enough profits are realized to launch a small-space national campaign. It takes years to become a full-page Life Magazine advertiser.

For every insertion the iceman has put in a magazine, he should be aware of the fact that he is not only paying for that one ad. Every cent that has been invested in every previous ad must be added to the cost of the present advertisement. Without the past advertising there would be no public awareness of current advertising.

What Curtailment of Advertising Means

For fifteen years national advertising has told the American public that the ice industry is not, as many had assumed, a soon-to-pass relic of the horse-and-buggy days but a live, forward - looking, dynamic industry.

A modest amount of national advertising has been the industry's national voice. So far as the public is concerned, with the abandonment of national advertising the industry will have spoken its piece, taken its final bow and retired to the chimney corner to dream of the days of its past greatness.

The ice industry will not be dead. No! But the public will so consider it because it will be silent, unheard from. It will have lost its national voice. And with the losing of its national voice, it will lose other valuable assets. It will lose the psychological effect national advertising has had on many ice companies and on many individuals in them, from president down to routemen.

Advertising is the Sunday suit that makes a business—or an industry—look good, look prosperous, look important. And a business or an industry inevitably strives to live up to the impression it is giving the public of itself. People who aren't going any place don't get dressed up. Industries that aren't going any place don't get dressed up either.

Had the industry itself actually come to the conclusion that it is not going any place? Is it really willing to let the American public come to that conclusion? When, and if, the ice industry abandons national advertising it will abandon another asset, the favorable position it now enjoys publicity-wise with newspapers, magazines and the trade press throughout the land.

Fifteen years ago, the only reference to ice in American press were either jokes about the ice man or derogatory references to ice as "old-fashioned", "out-of-date", etc. Today the ice industry and its product receive favorable editorial attention of inestimable value from the leading magazines and newspapers in America.

This attention did not just happen! It has been due to hard, consistent work with editors. But make no mistake about it. No amount of work, however hard, however able, would have gotten to first base with these editors unless they had first been convinced the ice industry was an important factor in American life. And it has been national advertising which created that attitude — and maintained it! No industry which does not demonstrate unmistakably that it considers itself important can hope to have others so consider it. This holds true not only for magazines and newspaper editors, but for other industries as well.

You—and other leaders of our industry — realize that we must look elsewhere than to supplying ice for domestic refrigerators for our future profits—that, to survive, we must develop new fields for the use of ice.

More Commercial Ice

The future of individual ice companies lies in the sale of more ice to fruit and vegetable retailers for the display and preservation of produce, to retail meat markets for use in combination with mechanical refrigeration and poultry icing, another field of almost unlimited potential is the sale of ice to fruit and vegetable growers for hydro-cooling and "field icing", and another, the sale of "special occasion" ice — whether block, cubed or crushed—to homes with mechanical refrigerators.

It may be possible to promote any or all of these fields by aggressive "local" selling on the part of an individual ice company without the support of national advertising. This "local" promotion is necessarily limited in its effect and is costly and usually slow to prove its effectiveness.

National advertising speeds up the process. It gets us where we've got to go more quickly and more economically — because it pre-sells the idea of ice for those uses to our prospects—because it puts a foundation under "local" sales efforts, and a background behind them—because it tells all America, with one unified voice, that we want America to know.

Advertising Needed

To abandon national advertising is to abandon this invaluable support. It is to leave each individual ice company fighting a single-handed "local" battle for survival. I am sure that you, and other forward-looking icemen, must realize down in your heart, that this is no time for the industry to crawl into its shell and resign itself to decay from within.

I am sure that you, and others like you, will realize that far from not being able to afford national advertising, the ice industry cannot afford not to advertise.

Research – What It Has Accomplished for the Ice Industry

L. L. SWARTZ
Chairman, Research and Engineering Committee
National Association of Ice Industries

LAST year, as the controls of our economy were tightened, it became apparent that more and more decisions would be made beyond the spheres of company management. It became clear that many contemplated actions would require official sanction. It became certain that an increased number of business activities would have to be cleared with government agencies. And, it became definite that more and more factors affecting our very existence would be made by government people.

This drastic change prompted some revision of our National Association programs. The logical course to follow in establishing an effective liaison set-up between our industry and government was to make it a function of the National. It was recognized, however, that this additional work could not be handled without increasing the staff on one hand, or reducing its existing peacetime activities on the other. Because of cost, the latter course was chosen.

We were fortunate in having in the National office three men who were thoroughly seasoned on government work during World War II. It was felt that by dividing the government assignments among these staff members, each man could be assigned to agencies where his contribution would be greatest. Specialization of assignments would also permit each man to continue his regular Association activities on a somewhat reduced scale.

As a result of this reorganization, the Research and Engineering Department assumed responsibility for the material and equipment program. Mr. Austin was assigned to this segment of the task because of his position with the Department of Agriculture during the last war and his knowledge of the agencies and people who are handling the present materials program.

The Materials Program

Many industries have suffered from severe shortages of materials or from strangling restrictions on their use. In general, facilities and equipment within this industry have been reasonably adequate. Here and there new facilities had to be constructed. A few plants required major repairs. A limited number of companies found that maintenance, repair and operating quotas were inadequate to meet some emergency. Fortunately, where there have been honest-to-goodness reasons for additional buildings or equipment, or where there was a real need for expanded quotas, these applications, in almost all cases, have been approved.

As during the last war, the Department of Agriculture is our claimant agency for construction and that equipment which accompanies construction. Applications, except for self-allocation of small quantities of steel, copper and aluminum, must be approved for new facilities. Present channels call for submitting these through the Production and Marketing Administration Field Offices of the U. S. Department of Agriculture in the area where the facility is to be located. If local approval is given, the applications are forwarded to Washington for final Departmental action. When a project is authorized, the materials are charged against those allocated to the Department of Agriculture for carrying on its numerous activities. It should be mentioned that because of critical shortages of steel, copper and aluminum, requests for these materials are subjected to rigid scrutiny. Quarterly allotments of these metals to the Department for use in the first part of 1952 have been drastically reduced. This, of course, means that competition among applicants for the available supplies in the months ahead will be much keener.

In turn, the Department has just tightened its rules for approval of proposed construction projects. In substance, there are three basic categories under which applications will now be considered: (1) Non-deferrable projects which are basically important to the nation's food program and where existing facilities are clearly inadequate. (2) Non-deferrable projects involving public health, safety and welfare, where local, state or national officials have ordered repair or replacement of buildings to safeguard public interests. (3) Projects involving severe personal hardship. This last category will be awarded materials only after needs of the first two classifications have been met.

Since the ice industry as a whole had excess producing capacity, we have devoted much of our attention this year to regulations dealing with maintenance, repair and operating supplies. Through our bulletin service, we have tried to keep you informed on the rules and regulations affecting these items. You have just been brought up-to-date on this subject in a recent release.

It has not been too difficult up to this point to keep the country's plants operating efficiently. The Government's self-allocating system of procuring maintenance and repair materials has served to protect plants from long and costly breakdowns. Many have been able to get what they have needed without certification. It is quite likely, however, that more icemen will have trouble during the winter and spring when repairs have to be made for next season's operation. More of you will be operating under the regulations and restricted by their provisions. Therefore, we urge you not to delay in placing orders for whatever you need for next year.

The Research Program

Despite the diversion of effort, it is very gratifying to be able to report to you that it has been possible to continue a substantial part of the Department's peacetime research. We have not had as many projects this year, but we have sponsored some studies which we believe to be as significant as any this Department has ever undertaken.

We have made real progress this year on the icing of sweet corn for local markets. Many times, I have been told by icemen that sweet corn was iced 15 years ago. Yes, that's true. Sweet corn which was being loaded into refrigerator cars for shipment to distant markets was iced. But sweet corn grown around every local market in the country, sweet corn which represented an entirely new market for hundreds of ice companies, has not been iced. The need for icing it was not appreciated.

The very successful study at Ohio State which was featured at our last Annual Convention was underwritten for a second year by the Ohio Association with the cooperation of the National. The Kroeger Grocery Company cooperated. Again the results are gratifying. The final report will not be published until about the first of February but I can give a few preliminary observations.

A survey of wholesalers and retailers indicated that most of them were willing to pay 5 or 10 cents per dozen premium for iced corn. This, of course, means 25 to 50 cents for a bag of five dozen ears. These figures are greatly in excess of what it costs to ice corn. If you figure five pounds to the dozen, you have a fair estimate of the amount of ice required. But

Presented at 34th annual convention National Association of Ice Industries.

this is not total outlay. The wet strength paper bag actually costs the grower less than packages which are commonly used. Such spreads not only make the deal economical, they make it very profitable for everyone, even if you discount the many other advantages of icing.

Growers who have now iced their corn for the second year are delighted with their results. The largest and perhaps the most prosperous grower in the Columbus area who has just finished icing his second crop iced 180 acres of sweet corn. He became a new ice customer, and his purchase put between two and three thousand dollars in some iceman's picket. Before the season was over, growers in other parts of the state were following suit. Growers from other states were writing in to the University to find out how it was done. Icemen in these communities will share the benefits.

Consumer Acceptance of Iced Sweet Corn

In Indiana, the State Association and the National sponsored a study aimed at developing information on consumer acceptance of iced corn. The report, which incidentally was very excellent, has just been released in an Ice Research News Letter. Like Ohio, in Indiana this method of handling is growing. More icemen within the state are enjoying the returns from it. People from outside the state are eager to know more about it.

This year the Illinois Association and the National cooperated with the Department of Agriculture on a corn icing study in that state. This is the first study on which we have cooperated in Illinois.

The experimental work on the icing of sweet corn over the past five years has definitely proved the value of proper use of ice in the marketing of corn for local consumption. Economical methods have been developed. A new and revolutionary procedure for packaging the corn and ice in wet strength paper bags has been discovered. A specially designed iced-corn bag is now available for sale to growers through ice companies or otherwise.

As a follow-up on the corn icing work, an appropriate letter has been sent by the Department to many of the country's agricultural leaders enclosing reports on the work at Ohio State and Purdue and pointing up its possibilities in their respective areas. It is hoped that other states will explore the idea on their own or with the advice of local ice people. This is an excellent and inexpensive program which unit ice associations and ice companies can promote. It affords an excellent opportunity to get acquainted and work with your state agricultural people.

We have uncovered new techniques and ideas in the handling of fresh vegetables which are of great value to growers, middlemen and consumers and on which we can cash in. There is a tremendous amount of ice tonnage which can be developed if this program is properly pushed. Much of it is at-the-platform business. If you want the business, and you're willing to promote it, it is there for you. If you don't want it, then you don't have to do a thing, and the flake ice people will gladly take it over.

For a number of years, we have heard that ice was being used in mechanical meat cases in Syracuse, N. Y. The idea, however, never seemed to take to any great extent in other areas. Last year the Research Committee decided to conduct some work on this subject. It wanted to find out whether icing of red meats was something peculiar to the handling of meats in Syracuse or whether the icing of mechanical meat cases offered a fine new outlet for millions of tons of ice. As a result, during the past year the Union Ice Company of California and the National Association sponsored a meat icing project at the University of California. An effort was made to determine the merits of icing mechanical meat display cases. The report has just been prepared. The results are excellent, and I know you will be encouraged and inspired when you hear of its results at this convention.

Poultry Icing

The icing of poultry is by no means new to the industry. Yet, iced poultry displays have never gained the prominence warranted by their efficiency and attractiveness. Our cooperation with Swift & Company over the past two years, and their aggressive merchandising of iced poultry has done much to expand and increase the icing of poultry. Swift has done an excellent job of selling poultry. What's more, Swift has done a good job selling iced poultry. Swift has done a good job of selling ice.

The potential market for poultry ice is great. Much of it is still ahead of us. Because of this, the Research Committee felt that in order to assist in selling the retailer and the processor the industry needed more factual information. Actually, not very much material is available on the subject. We decided, therefore, to expand the California meat icing work to include poultry.

There are two general categories of poultry icing from which we can benefit. One is the icing of poultry displays in retail stores. Every iceman has many of these possible outlets. The other is the slush-cooling and package icing of poultry in processing plants. The number of the establishments has grown rapidly, and will continue to grow as poultry consumption increases. Their per unit consumption of ice is high. In planning the research, tests were included that would develop material which would be useful to icemen in working with both groups.

Fresh poultry is displayed in several ways in retail stores. Some markets follow the policy of displaying poultry in ice with the top layer displayed half buried in the ice. This may be done in either a mechanical case or an iced case. Other stores place their poultry on white porcelain pans in refrigerated cases. In a few places, poultry is simply hung on hooks without the benefit of refrigeration. We have made comparisons of the economy and effectiveness of these methods of handling and displaying poultry.

Conditions Simulated

To simulate actual conditions, identical quality poultry was held for a period of time under each method and records were kept on shrinkage and other quality factors. One group of broilers was kept half-buried in cracked ice in a mechanical case at a temperature of 35 to 36 F and a relative humidity of 80 to 90 percent. Another group was displayed at the same temperature without ice and a relative humidity of 63 to 70 percent. A third group was held at room temperature, which in this case was a very low room temperature—so low in fact that it might be termed cooler temperature—45-48 F and 60 percent humidity.

At the end of four days, the broilers which were half-buried in ice were moist, their original bloom had been maintained and their sales appeal was excellent. The birds which were displayed in mechanically refrigerated cases without ice were noticeably less attractive than those held in ice. They began to lose their bloom at the end of 24 hours and were quite dry and brown at the end of 96 hours. Further experimentation showed that broilers, dressed New York style and displayed in this manner, spoiled at the end of six days and for the six day period lost three percent in weight. Broilers hung at room temperature deteriorated rapidly. They were very brown and unattractive at the end of 24 hours and were quite spoiled at the end of four days. The amount of shrinkage for the four days was 17 percent. As might be expected by a group of icemen, broilers displayed half-buried in cracked ice were in salable condition at the end of seven days.

The tests which were conducted on refrigeration methods used in the processing plant indicated that broilers will drop from 67 F to 34 F in about 2½ hours when they are placed in ice water which is not agitated.

In general, all of the experiments conducted indicated that poultry displayed in cracked ice was much more attractive in appearance, was in better condition and suffered less shrinkage than birds of identical quality displayed in mechanical cases without ice.

For some time the Research Committee has felt that a performance and economy study was greatly need-

ed on ion exchange for treating water for ice manufacture. Manufacturers of this equipment have continued to approach ice men with miraculous claims of what ion exchange could do for them. This method of treating water, of course, has been widely used and to great advantage by many American industries. Yet these installations are not inexpensive and the performance which may be expected depends on many variables. The types of equipment differ with the various manufacturers. Water varies with the source of supply and geographic areas. Economy of operation would depend on both of these, manner of use and many other factors.

Our bids for such an investigation were considerably beyond our resources. Consequently, the only way we could hope to undertake such a study was to solicit the cooperation of agencies which had a mutual interest. We are glad to report that the project has been underwritten. This was possible through the cooperation of the Calcium Chloride Association, the Industrial Filter and Pump Manufacturing Company of Chicago, and the School of Engineering of the University of Texas. The work is being conducted by the University of Texas at an ice plant in Austin. The study will run for two years.

Treatment of Water

On the general subject of treatment of water, more and more ice companies over the country are having water troubles. The Committee felt that because of this situation the industry was in need of a simple manual on treatment of water for the use of operating engineers. Arrangements have been made with Messrs. Holaday and Brandt of Inland Testing Laboratory and ICE AND REFRIGERATION, respectively, for the preparation of such a manual. Present plans call for completion of the project early next year. At that time we plan to mail a copy of the manual to each member of the Association.

At the spring meeting of the Board in 1950, the Research Department was directed to undertake the development of equipment for automatic production of prepared ice. We approached one of the country's best known equipment manufacturers on the subject. It was found that the manufacturer was interested and willing to cooperate. When this progress report was made to the Board at our annual convention last year, some felt that such a unit might possibly result in another point-of-use ice maker with which the industry would have to compete. Although the Department was authorized to go ahead, lack of unanimity of opinion has definitely slowed progress through raising doubt in the mind of the manufacturer as to the reception such a machine might get if and when it is offered to the industry.

Program for Next Year

Now, I would like to outline for you the projects on which our Committee feels that we should concentrate next year.

In addition to going forward with the work in progress, we believe that the entire agricultural program should be expanded. Hydrocooling is not new to shippers in a few of the heavy commercial producing areas of the country. Its use, however, outside of these regions is negligible. Its use has been limited almost entirely to fresh commodities which move great distances to market. Yet results with corn, and other perishables for local consumption have been sufficiently encouraging to warrant our undertaking additional work in this field. We believe these investigations should include asparagus, peas, beans, corn, peaches, pears and cherries. We also think that the work should be aimed at fresh commodities for local consumption and products for canning. A small exploratory study of icing of lima beans for canning has just been underwritten by the Department at Purdue University. This is definitely a trail project and if the results are favorable, we hope to sponsor a much larger project next year which would include several commodities.

The Research Department has often considered the possibility of using ice for the display of packaged self-service meats. Through our meat study this year, we believe that additional light has been thrown on this subject. The idea has been discussed with the research people of Swift & Company, the American Meat Institute, and the people at the University of California. These discussions have led to the belief that we have a reasonable chance of favorable results in the use of ice for display of packaged meats. Because of the excellent work which was done by Dr. Carroll of the University of California on the icing of meat in mechanical cases, we hope to persuade him to undertake the packaged meat investigation.

Ice in Mechanical Cases

It has been observed that more and more retailers are experimenting on their own, or with the assistance of some local ice company, on the use of ice on fresh vegetables which are displayed in mechanical cases. This is particularly true of some of the chain organizations. Although we have suggested this idea, and some icemen have gone so far as to sell the retailer on turning off his refrigeration and using ice exclusively, we have never made a real study of the merits of using ice in connection with mechanical refrigeration in displaying fresh vegetables. This year we would like to explore this idea.

During a recent convention, a display of packaged corsages on ice attracted a great deal of attention. The cellophane package in which the flowers were displayed was split on the underside where it came in contact with the ice. The display and keeping qualities were unbelievable even to the florist who furnished the flowers. We would like to work out a cooperative project with the florist industry on the display and keeping of flowers. As you know, flowers are very perishable and the florist has his labor problems. These problems are particularly acute just before holidays and special occasions. It is quite possible that real progress could be made in the handling and displaying of this perishable commodity. The subject has been discussed with Purdue University. They believe that such an investigation has real merit and they would like to work with us on it.

The manufacturer with whom we have been cooperating on the automatic production of prepared ice asked the Committee to make its recommendations regarding the characteristics of such a machine. The Committee reached the following conclusions: Such a unit should make solid, crystal-clear pieces of ice. The shape should be a cube. The unit of ice should be approximately the size of the cube now being offered by the industry. It was the general opinion of the Committee that the machine should produce about five tons of ice per day and it should be designed so that an ice manufacturer could employ the use of whatever number of machines he needs. This is the pattern which will be used in the Department's exploratory work.

Location of Venders

Our study on the location of ice vending stations which was conducted last year at the University of Pennsylvania has been very helpful to members of the industry. First, it pointed up the possibilities of vending ice to many who had never given it serious thought. Secondly, it provided many sound suggestions for selecting sites for stations. We believe, however, that this study should be followed by another investigation which would go into topics not covered in the site analysis. This proposed project should include among other things the kind of ice purchased, the size of package preferred, what the ice is to be used for and the problems which must be faced in operating stations. This information would serve not only to guide a purchaser in planning his operation, but it also would serve to keep him from expecting the impossible from vending stations.

The Department would like to develop some information which could be used by members of the Industry in establishing and servicing truck terminals. We are convinced that many companies over the country could profit by providing this type of service.

(Continued on page 64)

Synchronous Motors and Power

Increasing load on power systems already loaded to near capacity makes high plant power factor of prime importance. Use of synchronous motors suggested

J. C. MOORE
Large Motor and Generator Dept., General Electric Company

Refrigeration plants have made wide use of synchronous motors for many years. They were ideal for large refrigerant compressors operating at moderate speeds. Lately the speed of many reciprocating compressors has increased but the synchronous motor continues to be the preferred drive on many applications.

In addition to what might be called specialty plants, large scale refrigeration is moving more and more into diversified plants where the synchronous motor drive on the compressors can have more important functions in power factor correction. Good data for choosing a motor to provide power factor correction are given in this article, along with other factors of principal consideration.

IN these days of rapidly expanding production, with the consequent upswing in the installation of plant production machinery, many plant engineers are concerned about increasing the load on power systems that are already loaded almost to capacity. Others are contemplating the addition of new power systems where exisiting systems obviously cannot handle an expanding load.

In either case, high plant power factors are of prime importance, because the load which any power system will carry is proportional to the plant power factor, which is expressed as kw load divided by the kva load. The efficiency of the whole plant power system increases as the power factor approaches unity. A higher power factor may make it possible to safely increase the hp load on an existing system. It can also mean less investment in transformers, feeder lines, and voltage regulating devices where a new system is required.

Good operating conditions require high power factors, too. Poor power factor often results in voltage drops which increase the slip of induction motors to the point where production is adversely affected. If the voltage drops more than 10 per cent below normal, it is quite possible for induction motors to become overheated or stall. And high power system losses, poor plant lighting conditions, high power bills, and increased maintenance of the power supply commonly accompany poor power factor.

In most power systems, poor power factor is caused by excessive demands for magnetizing current (reactive kva) by induction motors at part loads, transformers, electric furnaces, electric welders, and other inductive equipment. This magnetizing current although necessary does no useful work, of course, and limits the power which a system can carry.

Synchronous Motors Improve Power Factor

When a new motor drive (75 hp or larger) is needed in a plant, the installation of a synchronous motor can economically improve plant power factor. A unity power factor synchronous motor (current in phase with the voltage) accomplishes this by adding to the kw load on a power system without increasing the reactive kva load, since it needs no magnetizing current to operate when normally excited at full load. In other words, it brings the ratio $\frac{kw}{kva}$ closer to 1. For example, if a 1000-hp unity power factor synchronous motor is added to a 1000-hp plant load having a power factor of .80, the new load of 2000 hp would have a power factor of .935.

A leading power factor synchronous motor (current leading the voltage) improves plant power factor because it acts as a kilovar generator, and can supply fairly large amounts of kilovars to a power system while performing its usual driving duties.

The ability of either unit power factor or 0.8 power factor synchronous motors to improve power factor is a function of load and excitation. Decreasing the mechanical load without changing the field excitation increases the reactive kva output of the motor. Fig. 1 shows the reactive kva that two typical synchronous motors will deliver under various load conditions with normal excitation. It is seldom economical to operate a synchronous motor at part load in order to gain greater power-factor improvement and the motor should never be over-excited for this purpose, as this practice can lead to serious overheating.

Another desirable characteristic of the synchronous motor with regard to its affect on the plant power supply is its tendency to stabilize the voltage. Under conditions of high voltage, the reactive kva furnished by a synchron-

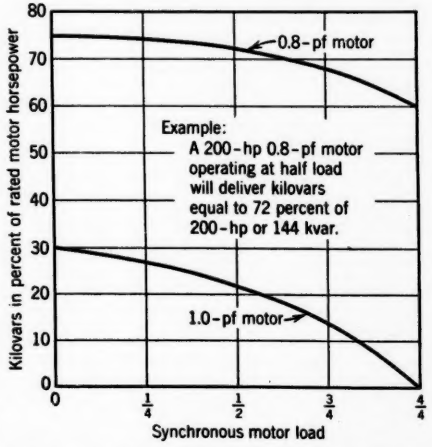


Fig. 1—Curves showing approximate kilovars supplied by synchronous motors.

TABLE I. KW MULTIPLIERS FOR DETERMINING KILOVARS REQUIRED FOR POWER FACTOR IMPROVEMENT

Original Power Factor ($\cos \theta_1$)	Desired Improved Power Factor ($\cos \theta_2$)																			
	0.80	0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.0
0.50	0.982	1.008	1.034	1.060	1.086	1.112	1.139	1.165	1.192	1.220	1.248	1.276	1.306	1.337	1.369	1.403	1.440	1.481	1.529	1.589	1.732
0.51	0.937	0.962	0.989	1.015	1.041	1.067	1.094	1.120	1.147	1.175	1.203	1.231	1.261	1.292	1.324	1.358	1.395	1.436	1.484	1.544	1.687
0.52	0.893	0.919	0.945	0.971	0.997	1.023	1.050	1.076	1.103	1.131	1.159	1.187	1.217	1.248	1.280	1.314	1.351	1.392	1.440	1.500	1.643
0.53	0.850	0.876	0.902	0.928	0.954	0.980	1.007	1.033	1.060	1.088	1.116	1.144	1.174	1.205	1.237	1.271	1.308	1.349	1.397	1.457	1.600
0.54	0.809	0.835	0.861	0.887	0.913	0.939	0.966	0.992	1.019	1.047	1.075	1.103	1.133	1.164	1.196	1.230	1.267	1.308	1.356	1.416	1.559
0.55	0.769	0.795	0.821	0.847	0.873	0.899	0.926	0.952	0.979	1.007	1.035	1.063	1.093	1.124	1.156	1.190	1.227	1.268	1.316	1.376	1.519
0.56	0.730	0.756	0.782	0.808	0.834	0.860	0.887	0.913	0.940	0.968	0.996	1.024	1.054	1.085	1.117	1.151	1.188	1.229	1.277	1.337	1.480
0.57	0.692	0.718	0.744	0.770	0.796	0.822	0.849	0.875	0.902	0.930	0.958	0.986	1.016	1.047	1.079	1.113	1.150	1.191	1.239	1.299	1.442
0.58	0.655	0.681	0.707	0.733	0.759	0.785	0.812	0.838	0.865	0.893	0.921	0.949	0.979	1.010	1.042	1.076	1.113	1.154	1.202	1.262	1.405
0.59	0.619	0.645	0.671	0.697	0.723	0.749	0.776	0.802	0.829	0.857	0.885	0.913	0.943	0.974	1.006	1.040	1.077	1.118	1.166	1.226	1.369
0.60	0.583	0.609	0.635	0.661	0.687	0.713	0.740	0.766	0.793	0.821	0.849	0.877	0.907	0.938	0.970	1.004	1.041	1.082	1.130	1.190	1.333
0.61	0.549	0.575	0.601	0.627	0.653	0.679	0.706	0.732	0.759	0.787	0.815	0.843	0.873	0.904	0.936	0.970	1.007	1.048	1.096	1.156	1.299
0.62	0.516	0.542	0.568	0.594	0.620	0.646	0.673	0.699	0.726	0.754	0.782	0.810	0.840	0.871	0.903	0.937	0.974	1.015	1.063	1.123	1.266
0.63	0.483	0.509	0.535	0.561	0.587	0.613	0.640	0.666	0.693	0.721	0.749	0.777	0.807	0.838	0.870	0.904	0.941	0.982	1.030	1.090	1.233
0.64	0.451	0.474	0.503	0.529	0.555	0.581	0.608	0.634	0.661	0.689	0.717	0.745	0.775	0.806	0.838	0.872	0.909	0.950	0.998	1.058	1.201
0.65	0.419	0.445	0.471	0.497	0.523	0.549	0.576	0.602	0.629	0.657	0.685	0.713	0.743	0.774	0.806	0.840	0.877	0.918	0.966	1.026	1.169
0.66	0.388	0.414	0.440	0.466	0.492	0.518	0.545	0.571	0.598	0.626	0.654	0.682	0.712	0.743	0.775	0.809	0.846	0.887	0.935	0.995	1.138
0.67	0.358	0.384	0.410	0.436	0.462	0.488	0.515	0.541	0.568	0.596	0.624	0.652	0.682	0.713	0.745	0.779	0.816	0.857	0.905	0.965	1.108
0.68	0.328	0.354	0.380	0.406	0.432	0.458	0.485	0.511	0.538	0.566	0.594	0.622	0.652	0.683	0.715	0.749	0.786	0.827	0.875	0.935	1.078
0.69	0.299	0.325	0.351	0.377	0.403	0.429	0.456	0.482	0.509	0.537	0.565	0.593	0.623	0.654	0.686	0.720	0.757	0.798	0.846	0.906	1.049
0.70	0.270	0.296	0.322	0.348	0.374	0.400	0.427	0.453	0.480	0.508	0.536	0.564	0.594	0.625	0.657	0.691	0.728	0.769	0.817	0.877	1.020
0.71	0.242	0.268	0.294	0.320	0.346	0.372	0.399	0.425	0.452	0.480	0.508	0.536	0.566	0.597	0.629	0.663	0.700	0.741	0.789	0.849	0.992
0.72	0.214	0.240	0.266	0.292	0.318	0.344	0.371	0.397	0.424	0.452	0.480	0.508	0.538	0.569	0.601	0.635	0.672	0.713	0.761	0.821	0.964
0.73	0.186	0.212	0.238	0.264	0.290	0.316	0.343	0.369	0.396	0.424	0.452	0.480	0.510	0.541	0.573	0.607	0.644	0.685	0.733	0.793	0.936
0.74	0.159	0.185	0.211	0.237	0.263	0.289	0.316	0.342	0.369	0.397	0.425	0.453	0.483	0.514	0.546	0.580	0.617	0.658	0.706	0.766	0.909
0.75	0.132	0.158	0.184	0.210	0.236	0.262	0.289	0.315	0.342	0.370	0.398	0.426	0.456	0.487	0.519	0.553	0.590	0.631	0.679	0.739	0.882
0.76	0.105	0.131	0.157	0.183	0.209	0.235	0.262	0.288	0.315	0.343	0.371	0.399	0.429	0.460	0.492	0.526	0.563	0.604	0.652	0.712	0.855
0.77	0.079	0.105	0.131	0.157	0.183	0.209	0.236	0.262	0.289	0.317	0.345	0.373	0.403	0.434	0.466	0.500	0.537	0.578	0.626	0.686	0.829
0.78	0.052	0.078	0.104	0.130	0.156	0.182	0.209	0.235	0.262	0.290	0.318	0.346	0.376	0.407	0.439	0.473	0.510	0.551	0.599	0.659	0.802
0.79	0.026	0.052	0.078	0.104	0.130	0.156	0.183	0.209	0.236	0.264	0.292	0.320	0.350	0.381	0.413	0.447	0.484	0.525	0.573	0.633	0.776
0.80	0.000	0.026	0.052	0.078	0.104	0.130	0.157	0.183	0.210	0.238	0.266	0.294	0.324	0.355	0.387	0.421	0.458	0.499	0.547	0.609	0.750
0.81		0.000	0.026	0.052	0.078	0.104	0.131	0.157	0.184	0.212	0.240	0.268	0.298	0.329	0.361	0.395	0.432	0.473	0.521	0.581	0.724
0.82			0.000	0.026	0.052	0.078	0.105	0.131	0.158	0.186	0.214	0.242	0.272	0.303	0.335	0.369	0.406	0.447	0.495	0.555	0.698
0.83				0.000	0.026	0.052	0.079	0.105	0.132	0.160	0.188	0.216	0.246	0.277	0.309	0.343	0.380	0.421	0.469	0.529	0.672
0.84					0.000	0.026	0.053	0.079	0.106	0.134	0.162	0.190	0.220	0.251	0.283	0.317	0.354	0.395	0.443	0.503	0.646
0.85						0.000	0.027	0.053	0.080	0.108	0.136	0.164	0.194	0.225	0.257	0.291	0.328	0.369	0.417	0.477	0.620
0.86							0.000	0.026	0.053	0.081	0.109	0.137	0.167	0.198	0.230	0.264	0.301	0.342	0.390	0.450	0.593
0.87								0.000	0.027	0.055	0.083	0.111	0.141	0.172	0.204	0.238	0.275	0.316	0.364	0.424	0.567
0.88									0.000	0.028	0.056	0.084	0.114	0.145	0.177	0.211	0.248	0.289	0.337	0.397	0.540
0.89										0.000	0.028	0.056	0.086	0.117	0.149	0.183	0.220	0.261	0.309	0.369	0.512
0.90											0.000	0.028	0.058	0.089	0.121	0.155	0.192	0.233	0.281	0.341	0.484
0.91												0.000	0.030	0.061	0.093	0.127	0.164	0.205	0.253	0.313	0.456
0.92													0.000	0.031	0.063	0.097	0.134	0.175	0.223	0.283	0.426
0.93														0.000	0.032	0.066	0.103	0.144	0.192	0.252	0.395
0.94															0.000	0.034	0.071	0.112	0.160	0.220	0.363
0.95																0.000	0.037	0.079	0.126	0.186	0.329
0.96																	0.000	0.041	0.089	0.149	0.292
0.97																		0.000	0.048	0.108	0.251
0.98																			0.000	0.060	0.203
0.99																				0.000	0.143
																					0.000

Example: Plant has input of 200 kw at a power factor of 80 percent. To find the reactive kva required to raise the plant power factor to a desired 95 percent, multiply the 200 kw by the factor found in the Table under 95 percent opposite to the original power factor of 80 percent, or 0.421. Kvar required therefore, is 200x0.421 or 84.2 kvar.

ous motor decreases, and under conditions of low voltage within reasonable limits, it increases. The motor, therefore, has a tendency to hold a constant voltage in the power supply.

Furthermore, synchronous motors usually have a higher full-load efficiency than any other type of motor, and produce a greater amount of work per dollar's worth of power consumed. Where loads are heavy and continuous, an advantage of from 0.5 to 3.0 percent in efficiency saves a considerable sum in operating expense, and leaves more power available for other plant equipment. At reduced loads, the difference becomes greater to a marked degree, for an efficiency of 75 percent at 5 percent load has been attained in a synchronous motor.

Whether or not a synchronous motor should be installed for power factor correction depends upon several factors. A careful study might reveal that the particular plant and application might lend themselves better to induction motors and capacitors under certain conditions. The total cost, total load, present power factor, and amount of power factor improvement desired all have a bearing on the type of apparatus best suited for improving the power factor. And the provisions made for obtaining a high power factor in a brand new plant are likely to be quite different from those feasible in an existing plant.

Table I is a tabulation of multipliers which may be used to determine the number of kilovars required to improve power factor by given degrees. Table II shows the kilovars generated by synchronous motors per kw input at various power factors.

TABLE II. LEADING REACTIVE KVA PER KW INPUT FOR SYNCHRONOUS MOTORS

Pf.	Kvar	Pf.	Kvar
1.00	.000	.74	.909
.99	.142	.73	.936
.98	.203	.72	.964
.97	.251	.71	.992
.96	.292	.70	1.020
.95	.329	.69	1.049
.94	.363	.68	1.078
.93	.395	.67	1.108
.92	.426	.66	1.138
.91	.456	.65	1.169
.90	.482	.64	1.201
.89	.512	.63	1.233
.88	.540	.62	1.266
.87	.567	.61	1.299
.86	.593	.60	1.333
.85	.620	.59	1.368
.84	.646	.58	1.405
.83	.672	.57	1.442
.82	.698	.56	1.479
.81	.724	.55	1.508
.80	.750	.54	1.559
.79	.776	.53	1.559
.79	.776	.53	1.600
.78	.802	.52	1.643
.77	.829	.51	1.687
.76	.855	.50	1.732
.75	.882		

These tables may be used together to determine the approximate size of synchronous motor which would be needed to accomplish a required power factor improvement.

Desirable Characteristics

Besides their ability to improve the efficiency of plant power systems, synchronous motors have other desirable characteristics which make them especially suitable for many kinds of large motor drives. Some of these are:

1. They may be obtained at very low speeds, thus eliminating or reducing the need for speed-reducing gears.

2. The construction of low-speed synchronous motors results in a saving in space along the shaft when the motor is to be overhung or built into the driven machine.

3. Split rotor construction is optional in low-speed types, which facilitates assembly on shaft of driven machines.

4. Low maintenance costs are the result of inherently simple construction which leaves all parts accessible.

5. In ratings where the hp is equal to or greater than the speed, they have a lower first cost, including control and exciter, than any other a-c motor with its control.

6. A wide range of torques is available to make possible starting under heavy loads.

7. Dynamic braking brings heavy loads to a smooth, quick stop.

8. Since they run at an exact rated speed, they insure a constant rate of production in constant-speed applications. This constant-speed feature is not affected by voltage changes.

9. They have an inherently large air gap, making field assembly and maintenance easy and economical.

The combined economic and operating advantages of synchronous motors make their consideration worthwhile where any plant requires a new large motor drive. In many instances the installation of synchronous motors is the most economical method of improving plant power factor when their ability to provide efficient mechanical power at the same time is considered.

Chart Shows Daily Record of Power Use

FOR keeping track of electric power consumption and cost, the National Ice & Storage Company, San Francisco, Calif. has devised the form illustrated below. It is a daily record showing meter reading, kva's consumed, power factor, kw hours consumed, net cost, cost per kw-hr and other items.

DATE	REACTIVE METER READING	REACTIVE KVA-h CONSUMED	POWER FACTOR	P.F. DISCOUNT PCT.	P.F. DISCOUNT AMOUNT	DEMAND MAX.	DEMAND BILL	KWH METER READING	KILOWATT HOURS CONSUMED	NET COST	COST PER KWH
1-27-49	6819	73,920	94	1.125	21.05	446	462	5193	212,160	1850.45	.0088
2-28-49	6886	64,320	96	1.375	26.12	396	453	5414	212,160	1801.43	.0085
3-29-49	6980	90,240	93	1.0	19.44	416	444	5656	232,320	1924.96	.0083
4-27-49	7089	104,640	92	.875	17.91	425	448	5916	251,520	2028.89	.0081
6-1-49	7222	127,680	90	.625	13.47	454	462	6198	268,800	2141.23	.0080
6-29-49	7382	153,600	90	.625	15.21	497	487	6525	316,800	2418.24	.0078
7-28-49	7496	109,440	93	1.0	21.73	428	455	6814	274,560	2150.92	.0079
8-26-49	7602	101,760	95	1.0	20.80	425	451	7082	267,280	2059.25	.0080
9-27-49	7736	128,640	92	.875	20.09	468	473	7388	293,760	2278.46	.0078
10-26-49	7880	138,240	89	.5	10.90	456	466	7672	272,640	2129.20	.0080
11-29-49	8036	149,760	90	.625	14.91	446	462	8000	314,880	2370.12	.0078
12-28-49	8180	138,240	90	.625	13.89	446	462	8294	282,240	2208.01	.0078
									3189,120	25399.06	.0079

PLANT: SAN FRANCISCO #6	METER	CONSTANT	SCHEDULE: C-1-A
ADDRESS: 35 KANSAS STREET	KWH	960	MAX. DEMAND: 497 DATE: 6-29
ACCOUNT NO: 7166-90	RKVA	960	MAX. DEMAND PREV. 11 MONTHS:
REMARKS:	DEMAND	960	

Sample Chart Prepared by National Ice & Storage Company Showing detailed figures on power consumption.

Practical Refrigerating Engineer

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS

A. R. Carlson, Chicago, Ill.
President National Association Practical Refrigerating Engineer

NEWS

OPERATING

MAINTENANCE

QUESTIONS -- ANSWERS

OFFICERS

President
A. R. CARLSON, *Chicago, Ill.*

First Vice-president
ALVIS CLAY, *Memphis, Tenn.*

Second Vice-president
LEO VIVIEN, *New Orleans, La.*

Treasurer
LELAND KENAGY, *Newton, Kans.*

Sergeant-at-Arms
H. B. BRANHAM, *Pocatello, Idaho*

EXECUTIVE OFFICE
EMERSON BRANDT, *Secretary*
435 North Waller Avenue
Chicago 44 • Illinois

42nd Annual Convention of NAPRE Meets in Memphis

WHILE blizzards and unusually bad weather were making headlines elsewhere, NAPRE members were in Memphis for their convention. They enjoyed a very stimulating and informative engineering program. Added to it was a most hospitable and entertaining welcome from the local chapter. The meeting was held in the Peabody Hotel on November 6 to 9.

The convention was called to order by President Howard Peterson, Yakima, Washington who had been delayed by storms but completed his long journey in plenty of time to guide the convention to a very successful conclusion. After his opening remarks, President Peterson introduced George Lauer, Executive Vice President, Clover Farm Dairy, Memphis, who welcomed the group to the city:

Members Welcomed

"It is a great privilege for me to greet the members and guests of the 42nd Annual Convention of your Association. You gentlemen who have contributed so much to the development and progress of refrigeration.

"We of Memphis have a very selfish appreciation of your particular field. You kept our business going last summer, for we had 35 consecutive days of 90 to 100 degree temperature, with extremely high humidity. Without modern refrigeration and air conditioning, business certainly would have suffered.

"We are proud, and honored, that our city has been—for the fourth time—chosen for an Annual Convention of the National Association of Practical Refrigeration Engineers. Many of you have traveled across the country to attend. When I look over your comprehensive and excellent program, I can understand why.

"We have been tremendously interested in the history and growth of your organization which was founded by engineers of the South who realized the need for an exchange of ideas which would provide a means of continuous education in the refrigeration field.

"Messrs. Norman Register, J. B. Embry, O. E. Morris and F. H. Ladd —all deceased, held an organization meeting in Texarkana, Arkansas on January 20, 1910. The first Convention was held in Shreveport, Louisiana in December of the same year. I am pleased to say that two of the Charter Members are living in Memphis today, Charles H. Stanton, Chief Engineer, Hotel Peabody and Charles A. Conley, Chief Engineer of the Memphis Cold Storage Warehouse Co. These men planted the seed of a great organization which has now forty-one years of outstanding accomplishment. The vast reservoir of knowledge your Association has accumulated over these years represents a capital investment from which industry and the public are receiving dividends today."

Continuing, Mr. Lauer told how Memphis has grown from 144,000 at the time of the first convention in 1915 to a current population of 400,000. Then he gave data on the commercial importance of the city and its dominant position in many activities. He concluded with the counsel of Daniel Webster:

"Let us develop the resources of our land, call forth its powers, build up its institutions, promote all its great interests and see whether we, also, in our day and generation may not perform something worthy to be remembered."

The response to the address of welcome was given by Lloyd Schroeder of Colton, Calif. one of the long distance travelers to the meeting. He thanked Mr. Lauer for the welcome extended and said that all the visitors were looking forward to a profitable and enjoyable meeting as a result of the good work of the local chapter and people.

N A P R E Department

President Reports

In a review of the operations during the past year, President Howard Peterson expressed appreciation to the large number of members who did so much to further the work of the association. He said that general cooperation among all the officers, committee members and others had accounted for the good results obtained. Special appreciation was given to Professor H. G. Venemann for the educational work carried on during the year and the good program arranged for the convention.

The membership building during the year, he said, had produced good results and the work accomplished by Chairman Ray Burnett of the Membership Committee produced a solid building for the future. President Peterson called attention to the great interest developed as a result of the new Refrigeration Course and emphasized the opportunity it gives the association to broaden and increase its field of usefulness.

Tribute was paid to Guy King for the excellent work in preparing this course and authorizing its use by the association. Special appreciation was expressed to Harold McDermott and Nickerson & Collins Co., for the cooperation which made distribution of the course possible.

President Peterson cited the fact that members of the association reside in many foreign countries. This, he said, is a testimonial to the value of the educational program because these men are unable to attend regular meetings and obtain the added benefits of personal association available in this country. He said his year in office had been appreciated as an opportunity to work and serve worthwhile objectives.

Report of the Secretary

Secretary Emerson Brandt then presented his annual report which included the following:

The past year has been characterized by many notes of optimism and encouragement. It wasn't just a careless cheerfulness but rather it sprang from a general appreciation of the job to be done, a realization of the work required and a willingness to make the needed effort.

The membership activity was typical. Of course Chairman Ray Burnett has great enthusiasm for anything he undertakes and he had a steady working associate in Emmett Quinn. At the convention last year the stage was set for a real contest between Los Angeles and New Orleans. They battled it out all year and New Orleans won with 100 percent renewals and 92 points. Los Angeles was close at the finish. Theirs was quite a difficult feat because they had won regularly for the past four years.

Dallas Chapter nosed out Chicago in the second division of the contest. This is based on percentage and they topped their closest rivals by 3 percent. Special recognition should be given to Seattle, Memphis and St. Louis for the results they obtained during the past year.

Alvis Clay, Memphis, Tenn.
First Vice President
National Association of
Practical Refrigerating Engineers

It is gratifying to note that the good work was not confined to the contest leaders. Practically all chapters were active in this important field and thus strengthened their operations. Especially noteworthy is the fact that so many have continued their drive since the contest closed.

During the year we published a new membership folder of a somewhat different type. In addition to the information about the association it contains testimonial letters from industrial leaders in different sections of the refrigeration field. Special appreciation is due Robert Bailey, Union Ice Co., San Francisco; Roy Hagen, California Consumers Corp., Los Angeles; Harold McLain, Railways Ice Co., Chicago; Harlan Nissen, Terminal Refrigerating Co., Los Angeles, K. V. Plummer, Pacific Fruit Express Co., San Francisco and Erich Utescher, Kirkeby Hotels Co., for the recommendations they have given to our association and its services. These are typical of the excellent support the association receives from many companies and individuals in the field of refrigeration application. It is both helpful and encouraging to us.

We are indebted to Earl Pollock, Export Manager of Vilter Manufacturing Co., Milwaukee for transmitting information on the association services to a large group of their representatives and distributors. They have shown keen interest and many are joining as members-at-large. In this country too, the member-at-large list is making good gains and we welcome these engineers to membership.

Educational Program

The enthusiasm of the membership and the interest developing among prospective members result from the valuable educational program being presented. The newest feature is the Refrigeration Course prepared by Guy King, a long time member and worker in the association. Serial distribution of this course was begun in September. The 32 page sections are mailed directly to members at intervals based on the speed at which it can be studied and learned. A study schedule for the first year has been prepared and furnished to all chapters, as well as published in Ice and Refrigeration. Distribution of the course will be coordinated with this schedule and it is expected that it will be completed in a little more than two years. Because of the number of mail returns we would emphasize again the desirability of keeping the national office up to date on your current address. Members are requested to send a notice of change of address to the national office as far in advance of their moving as possible.

The general educational program continues to be a tribute to the conscientious work of Professor H. G. Venemann, Chairman of the Committee. The Question Box he conducts has been a source of great interest and helpful information. He is completing his tenth year as chairman of this committee.

As the program of this convention unfolds we will all derive much of value from the papers and discussions he has arranged. He is also participating directly in the work by presenting a paper on an interesting subject and by directing one of the panels.

A number of our members are taking part in this program along with representatives of various companies of the industry in general. We are indebted to all of them for the work they have done in preparation of their papers and discussions which will not only benefit the attendants here but also the entire membership of the association.

In any discussion of the educational program of the association we should also recognize the good work accomplished regularly by the chapter committees and the instructors. The value of the association program and the general progress it makes are based on the good work these people do. They insure that the materials distributed by the national associa-

tion will be put to good use in the chapter and they supplement this activity on a local basis.

It is quite apparent that the association is making good progress in all departments. With Howard Peterson as president this had to be the result. He brought great enthusiasm and initiative to the office this year and has given leadership in all the activities. He has counseled and encouraged many chapters in their operations. Through letters and direct work he promoted membership. Included in his wide travels was a trip to Canada to work with the refrigeration engineers in and around Vancouver. These are only a few examples of the excellent direction given to to all of our operations this year. Inspired by such leadership all the officers and committee workers have accomplished much of value.

Reference Book

The Operating Data Books were distributed during the summer. The usual quality of reference material on plant operation was maintained and the 1951 Question Box adds a store of useful information to which our members will refer frequently.

The industry is well represented by advertising in this book. All of us can find good information about manufacturers and their products which will prove useful as a buyer's guide and to answer questions on sources of supply. The committee which solicited advertising was composed of the officers plus a group of very active members who produced good results in their campaign.

Chairman Utescher did a lot of direct work which added importantly to the results obtained. A significant portion of the total advertising revenue was derived from accounts secured by chapters. If this became a universal practice in the association it would do much to aid in meeting the continually increased production costs. As it is the Operating Data Book provides excellent engineering material for all of our members and also yields revenue to support the educational program of the association.

During the year we have concentrated on the objective of making our joint operations with the chapter more efficient and the results are becoming apparent. We appreciate the good cooperation of the chapters in this work. Special mention particularly is due the chapter secretary-treasurers who have taken extra effort to speed up dues remittances and keep our joint records synchronized. The members of the association could facilitate the work of the chapter secretaries by prompt payment of dues. Late payments usually take special handling and multiply this work. The subject takes on added importance because of the distribution of the refrigeration course. Members will not want to miss sections

Highlights of the Convention

THE entertainment program pleased everyone at Memphis. Feature event was the Annual Dinner on Wednesday evening. Later that evening the dance was preceded by an enjoyable program of songs by the Jubilee Singers, a negro chorus with many fine voices. The orchestra was good and it brought out an enthusiastic group of dancers.

Special events for the ladies included a reception on the first evening with an unusual program of travel movies and refreshments. On Thursday at noon there was a group luncheon followed by a style show and a sightseeing trip.

GLAMOR Girls of the convention were Ann Wegener and Norma Kenagy. Together their ages did not add up to 10 but they had an early start, attracting approving glances from everyone. Yet they were not at all self-conscious and showed remarkable poise for their years.

A STRIKING collection of flowers decorated the entertainment events. The card on them expressed good wishes to the convention and regret that Alice C. Voss could not be in attendance.

THE team of Charles Conley, Alvis Clay and Doug Smith was everywhere complimented by the convention attendants. Few people were inclined to believe that Charles Conley's convention experience went back to 1915 when the first meeting was held in Memphis. He looks too young but still he could prove it was true.

THE iron man act was accomplished by Professor Venemann. He presided at the opening session and presented one of the papers. That evening he was a member of the Bureau and demonstrated his characteristic sharpness. Later he came back as leader of the symposium on refrigerant recirculating systems. By the way two of his students contributed papers to the convention: Elliott Hallowell and Donald Glaspie.

MRS. VENEMANN attended several of the engineering sessions and commented that she found them very interesting. After the frozen foods symposium she told about her observations in this field. They parallel results obtained by research and recently published.

THE Pacific Fruit Express Co. had the largest delegation at the convention. The miles they traveled added up to quite a sum. They made numerous contributions to the convention.

THE New Orleans group fulfilled their reputation of the lively, jolly crowd. With it all they get things done as the annual reports showed. Credit George Whitman with a special assist on convention resolutions.

IN A quiet but informative way, Regis Gubser can usually answer any question that comes up. He does not push his opinions on anyone but when requested he usually has the background on most questions.

A LONG trip was made by William Finnegan although he was not able to attend the convention full time. In his discussion of frozen food problems and results and in his color motion picture he certainly made important contributions to the convention program.

THE Layne-Bowler Inspection Trip proved most interesting and enjoyable to the men attending the convention. The plants and equipment are quite extensive. Much interest was shown in the foundry which was said to be the second largest one in the area. Pumps of very impressive size and dimension were being fabricated, as well as a number of those in medium and smaller sizes. Special equipment such as the machine that puts an excellent thread on large pipe in one revolution proved to be very interesting. At the conclusion of the inspection trip a barbecue supper was served which proved to be an enjoyable climax to the trip.

THE Memphis Cold Storage Warehouse Co. added greatly to the good fellowship and enjoyment of the convention by providing refreshments. It gave many of the visitors and convention attendants an opportunity to relax between sessions and renew old acquaintances and make new friends.

THE entire convention was a Short Course on plant operation. N.A.P.R.E. members know what they want from the program and are not hesitant about asking questions to bring out the data they wish to receive.

of this course because of lagging in the payment of dues.

Memphis Convention

Sincere appreciation is due Memphis Chapter for its excellent work on this convention. Charles Conley and Alvis Clay are long time workers on the national scene. Joined by Doug Smith and the other members of the chapter they have worked well and effectively to insure that our 42nd meeting will be an excellent and enjoyable affair.

Unusually fine cooperation has been received from the Peabody Hotel. It has been a pleasure to work with all of the hotel people.

Financial

It is the duty of the secretary to receive and account for the income of the association. (A summary of the income and details of sources was given.)

It will be noted that the bank balance increased during the year. The cost of printing and binding the Refrigeration Course, however, is still outstanding because the bills have not been received. It is true that while distribution of the course began in 1951 it will be distributed over a 2 year period. As we look to the future we can hope that the enlarged interest and membership increase will continue and this in itself will aid in meeting the financial problems resulting from current inflation.

In Memorium

During the past year the association lost two honorary members who had contributed mightily to the progress and well being of the association. Both had recently been handicapped by illness but their records of work and achievement go back many years.

Harry T. Whyte was a member of the association for more than 30 years. He served as president in 1923 and was a most productive worker in all its affairs throughout the period of his active life.

Through his 30 years of membership Edwin Libby gave much of permanent benefit to the association. Beginning in 1927 he was chairman of the Educational Committee for 11 years. He expanded the service of the Question Box and was responsible for numerous engineering publications. In the mid-thirties he produced the loose leaf data series which became one of the most valuable services of the association. Much of the material there presented was prepared personally by Professor Libby.

The personality of both these men endeared them to the membership throughout the country and all of us were benefited by the long friendship we had with them.

Treasurer's Report

The annual report was presented by Treasurer Leland Kenagy, Newton, Kansas. He gave an accounting of the expenditures during the fiscal year recently closed. He reported that the bills and certifications on these expenditures had been checked and the books had been balanced. They were presented for examination by the Auditing Committee.

Operating Data Book

The report of Chairman Erich Utescher reviewed the activities of the committee.

"The 1951 Operating Data Book had a 6 percent increase in volume over the previous year. Under present conditions it was not easy to produce these results. It was done with the good cooperation of the advertisers, the committee and several of the chapters. Far in the lead among the local groups was New Orleans Chapter with 42 ads from local companies. Many of the chapter members cooperated to make this fine showing. Fifteen members secured one or more ads. Second in line was Memphis with 2½ pages total. They were followed by Chicago, Pittsburgh, Tulsa, San Francisco, Los Angeles and Seattle.

"After the national office had carried on the usual solicitation early in the year the committee took over the direct promotion job. Its work began early in March and carried on through to the middle of June. Good results were obtained but I can assure you that they were based on hard work. In addition to the officers the committee is composed of the following:

Walter Bernd, Sr., Washington
A. M. Casberg, Edinberg, Tex.
Victor Crothers, Seattle
William Finnegan, Los Angeles
John Glenn, Beardstown, Ill.
H. T. Holbrook, San Francisco
George Koehne, Tulsa
R. A. O'Neill, Corpus Christi
H. A. Simpson, Memphis
R. C. Walther, Seattle

Our members use the advertising in this book to check sources of supply and obtain product data. It would aid us a great deal if these members would let the advertisers know about the effectiveness of the ads. When you write to advertisers mention that you saw their ad in the book.

"Much engineering material is offered to us in these ads. Make a habit of following up these offers by writing for this material. You will thus build up your file of catalogs and engineering information.

"I have noticed that the books take on a rather worn appearance around the plant. The covers are soiled and wrinkled. Don't throw your old books away, however, because the outside looks worn. The information in these books is not repeated from year to year so that the man who saves them has a good reference collection."

Engineering Sessions

THE first engineering session was opened by G. E. Hicke, The Trane Company, La Crosse, Wis., who discussed Modern Compressors as Applied to Air Conditioning. He called attention to the fact that the trend in airplane motors is away from reciprocating type to obtain greater power in a smaller space. This, he said, is also true of refrigerating compressors where the reciprocating type is paramount up to 50 tons capacity. Above 100 tons, the centrifugal compressor is taking the bulk of the field and between 50 and 100 tons there is rather open competition.

Mr. Hicke compared the features of the two types of compressors. The centrifugal in many cases operates at low pressure and require a surge pump to take out non-condensables; it can be direct-connected to a drive motor at 3600 rpm and through step-up gears can be operated at the higher speeds. Inlet vane control can vary capacity from 10 to 100 percent. The reciprocating compressors have step-by-step capacity control and are direct connected to motors of speeds up to 1800 rpm. The control, in this case, is accomplished by unloading cylinders. The operation of such machines under special application demands such as in marine work and air conditioning were described.

The features in the design of late model compressors were described by Mr. Hicke. These included crank shafts made of nodular iron, special process valves which have longer wearing life and a large suction chamber which give better protection to the compressor. The values of these and other features were explained.

Unusual Conditions in Air Conditioned Operation and How to Meet Them were discussed in a paper by Elliott Hallowell, Snell Refrigeration Supply, Dallas, Tex. The hottest summer on record, Mr. Hallowell said, had tested all air conditioning systems and brought out any deficiencies existing in them. He discussed some of the sources of trouble. Heat from motors driving pumps and fans is added to the system and must be taken into consideration especially when the system is operating under maximum duty. Hot lines running through conditioned space can add much heat. These should always be insulated to reduce the heat gain to a minimum.

Fans and coils are frequently installed in attics or non-ventilated spaces where the high temperature adds heat to the air conditioning system. The experience last summer showed as much as three to five degrees can be picked up by the conditioned air from such sources. The time lag of heat passing through enclosures may reduce the required air conditioning capacity but in some cases it may accomplish a heat build-up which will require longer operating time. Churches are an example of buildings that may have a large heat build-up. Extra night air ventilation may be helpful or facilities for high volume ventilation may be incorporated in the air conditioning system. Ice accumulators using machines of less than peak capacity may be helpful on intermittent duty to cut down overall cost of the system. Mr. Hallowell reported that during the very high temperature period there was a rather insistent demand to keep air conditioned spaces at a larger than usual temperature difference.

Partial Loads

In contrast to the preceding paper, Prof. H. G. Venemann, Purdue University, discussed systems to accommodate reduced loads. Although designers are concerned to meet peak loads, Prof. Venemann said it is also necessary to accommodate partial loads and maintain desirable conditions in the air conditioned space. He showed the effective temperature zone on an ordinary psychrometic chart and pointed out that most people are comfortable when air conditions are held in this zone. It is necessary to control the output of refrigerating equipment and operate to maintain desirable conditions regardless of capacity requirements. The principal means for accomplishing this, he said, is to reduce suction pressure or have intermittent operation or reduce displacement of the compressor. The various methods of doing the latter were described.

It is also desirable to reduce evaporator capacity. Six ways to do this were cited as (1) reduction of the surface area, (2) cut down the face area, (3) increase refrigeration temperature, (4) reduce air volume, (5) by-pass a portion of the air and (6) vary the mixture of the outside and inside air.

Prof. Venemann then analyzed cooling coil selection and the determination of fan capacity. He gave examples of methods used to handle smaller loads and lower the ratio of sensible to total heat in order to keep the air conditions in balance.

Bureau of Information

The Bureau of Refrigeration Information which is always a convention feature attracted an enthusiastic crowd on the first evening of the convention. The chief of the board of experts was Leo Vivian, Engineers Examining Board, New Orleans. His associates were Alvis Clay, Refrigeration Inspector, Memphis, Tenn.; Bert McKenna, Golden State Co., Ltd.; San Francisco; Eugene Rytlewski, Westerlin and Campbell Co., Chicago, and Prof. H. G. Vennemann, Purdue University. This question and answer session was quickly launched into specific operating problems.

The first one had to do with practical thickness of insulation in various types of low temperature rooms or buildings. Then it went on to the operation of atmospheric or shell and tube condensers along with evaporative condensers. These and other questions received full treatment. The audience was invited to participate in the discussion which it did with considerable enthusiasm. Many good questions were handled and the session was concluded by the clock rather than any let-up in the flow of questions.

Wednesday Sessions

The Wednesday morning session was opened by Earlwood Barden, safety director, International Harvester Co., Memphis. Many in the audience described his talk "The Path to Improved Accident Experience" as the best safety discussion they had ever heard. Mr. Barden said the first step in any safety program is to determine what is desired from the program. Various objectives, he said, are to conserve manpower, to produce good effects on workmen by stressing the importance of the individual, give the employee financial security and save money for the plant operator.

As an example of the latter, Mr. Barden told how a large group who inspected the plant while it was shut down were provided with eyeglasses in order not to break the rule that everyone in the plant must protect his eyes with glasses. He said this policy had paid off because statistics would prove that eyesight had been saved for twenty four workmen during the past year. The cost of the glasses had been $15,000, but the cost of injuries without them would have been many times as much. Mr. Barden pointed out that the safety results obtained in any plant are a measure of the overall plant performance, and the quality of plant production. An accident-ridden plant cannot turn out good products at minimum cost.

There are two major types of safety programs, he said. One employs police methods while the other uses training methods. The latter is much better because it has a continuous effect with cumulative benefits and obtains real cooperation from all the workers. He gave details of the accident prevention program in their plant. Among the most important is to investigate every accident and obtain all the surrounding facts. These are analyzed by the committee representing both management and the workers and then are reported fully to the men. There is a safety deputy for each twenty men and he makes a weekly inspection with a written report so that the chances of overlooking safety factors is greatly reduced. The results have been fully demonstrated because the plant has an accident frequency of ten which is one-half of the rate shown by all plants in the metal working industry.

The activity is considered most important by management, not only because of the results previously mentioned, but also because it provides a common ground for cooperative effort between management and labor. The financial officer of the plant has reported that the safety program gives the best return obtained from any activity that the plant carries on.

How to Keep Power Costs at a Minimum was the subject of a paper by R. W. Vaughan and L. H. Heyman, Light, Gas and Water Division, City of Memphis. Mr. Vaughan recalled that before the turn of the century, it was realized that energy charges alone do not properly reflect utility service costs. As a result of studies, demand charges were added to cover the cost of service. He gave examples to show how the user with a higher load factor is entitled to a lower overall rate. The basis of establishing the demand was explained. Rate structures were analyzed and examwere given from the local power rates. It was pointed out that while block or step rates are rather universal, there is no general agreement for components of uniform blocks or the rates within these blocks.

The representative types of demand meters were described and Mr. Vaughan pointed out that one means of keeping power costs at a minimum is carefully controlled demands within any one time interval. Because motors draw extra energy during starting, starts of large motors should be spaced out. Where possible, the

use of auxiliary motors that operate at infrequent periods should be scattered so that only a limited number will be on the line at any one time. Once a reasonable maximum demand has been reached for any billing period, this demand should never be exhausted through carelessness. Haphazard methods cost demand dollars.

The importance of maintaining the power factor at or above the required minimum was emphasized. The money penalty for low power factor was shown by examples. In addition the losses in plant lines were analyzed because the speaker declared these losses add cost to operation. The use of capacitors and synchronous motors to improve power factor was explained. The other losses where plant distribution systems are inadequate to carry the load were also analyzed to show the needless cost. Also it was pointed out that where inadequate wiring brings low voltage, the life of the electrical equipment may be jeopardized.

Plant Operation

From long, extensive experience in surveying plant operation, C. T. Baker, consulting engineer, Atlanta, discussed Factors that Result in Poor Refrigeration Plant Operation. In preparation for his talk, Mr. Baker said he had summarized plant reports to pick up details of situations which are significant in operating costs and production results. In all these situations, notable for defective operating practice, Mr. Baker said he had not once found an N.A.P.R.E. member in charge of the plant.

The first example was a small ice plant which needed help because the power cost was running $3.25 per ton with an electric rate of 1¼ cents per kilowatt hour. The causes were found in small condensers which were not clean and produced high head pressure. There was oil in the coils of the freezing tank and other evidence of poor conditions. The plant finally failed because it would not follow recommendations for improvement. The new owners provided the improvements and cut the power cost to 75 cents per ton.

Mr. Baker went on to cite other plants such as one where oil to drive the engines was supplied from a 120 gal. tank, with resultant high oil cost. Oil consumption also was very high. With adequate storage tank and better operation, the cost of engine fuel was reduced more than 60 percent. He told about plants with inadequate wiring which resulted in low voltage at motor terminals and poor operating conditions. Other plants took a high penalty on power costs over a long period because of high condensing pressure due to non-condensable gas. Oil accumulation in evaporator coils was a frequent source of trouble and expense. Mr. Baker found too frequently that an entire plant was operated at costly low suction pressure in order to accommodate only a small portion of the load.

In one plant a 500 gpm centrifugal pump rated at 95 ft head was supplemented by another centrifugal pump of the same capacity rating at 40 ft head. The plant operator was surprised that he did not attain 1000 gal flow from this badly chosen pair of pumps. A cooling tower erected between two buildings which shielded it from the prevailing wind, gave very disappointing performance, but the owner had to be told why it would not work properly. Mr. Baker went on to describe the proper methods for engineering a cooling tower installation. He said troubles are not confined to refrigeration plants, that he has found similar mistakes in equipment selection and operation in numerous steam plants. Such troubles, he said, could be avoided by purchasing adequate equipment, installing it properly and providing efficient operation.

Men's Luncheon

At Wednesday noon, the men gathered for a luncheon which was followed by a brief discussion on various phases of association affairs. In calling the meeting to order, President Howard Petersen indicated that it is important to discuss chapter operations and membership matters so that everyone in the association will get the most out of his membership. The first special speaker was Addison Wegener, New Orleans, who drew on his chapter's experience to tell how to get the most out of the educational program.

In the chapter, he said, the selection of an instructor is most important and he described the methods their instructors had used to conduct successful refrigeration courses. Because many of the men in the classes work night shifts, his chapter had found it best to present their refrigeration course early in the evening, but he cautioned against starting so early that the men could not reach the meeting in time. Occasionally during the course he said it is advisable to have a plant meeting where the equipment being studied can be seen and operated for the benefit of the men.

Paul Toay, North Platte, Nebraska, described the interest developed in the refrigeration course by the men in his plant. All of the engineers joined in order to secure the course and now they are studying it on an informal basis. Because of schedules, the whole group cannot assemble at any one time.

Henry Turner, Tulsa, told how he had taken the first section of the refrigeration course to the manager of his plant so that he could see the content of the course. It produced a very enthusiastic response because the manager felt that the engineers and the plant would be benefitted by study of the material. For this reason, the company paid the initiation fee and dues for eight engineers and men in training for work as superintendents.

In the general discussion of chapter affairs and methods, Prof. Venemann alluded to the questions raised about securing a refrigeration instructor. He said that when chapters realized the importance of proper presentation of the educational program, they would take whatever steps were necessary to secure a good instructor. The principal attributes of a good instructor, he said, are the basic knowledge of the subject and a real will to teach. The instructor need not be presently engaged in teaching.

The session was concluded with a discussion of the business operations of the association by Secretary Emerson Brandt. He told how the records of the association are set up and maintained and discussed the cooperative work between the chapter secretaries and the National office.

Public Relations Possibilities

The "No Admittance" sign has been removed from many refrigerating plants and now the public is being invited to come in and see how they operate. This is one of the features of developing public relations in the refrigeration plant as told by Charles Burns, chief engineer, Clover Farm Dairy, Memphis.

He described the way in which milk plant operations have developed to where large volumes are collected over a wide area and brought into the city with good maintenance of quality throughout the whole process of preparation and distribution. This, he said, depended primarily on refrigeration and called attention to the fact that Grade A milk standards are a relatively recent development. During the life of many in the audience, he said, that milk distribution had progressed from an era when a large

tank in the milk wagon was emptied into small measuring cups and carried into the home to be poured into the family milk pitcher. At the present time, he said, there are many countries where the dairy industry has not developed the many refinements and the high quality product which is enjoyed by consumers in this country.

He went on to show how sanitation is insured and the process is used to clean and sterilize milk bottles before they are filled. Pasteurizing and homogenizing were described as rather exacting processes which can be explained simply to the plant visitor to indicate the care used in processing his food products. Over a period of years, thousands of school children, medical students, and the general public have visited the Clover Farm plant and Mr. Burns described a system of signs placed on equipment to explain its functions and at the same time, to promote the product being manufactured. He urged all engineers to examine the possibility of using their plants for building public relations and encourage the idea wherever possible.

Frozen Food Symposium

Frozen Food—Plants and Operation was the subject of a symposium with Regis Gubser, California Consumers Corp., Los Angeles, as moderator. The panel was composed of Howard Peterson, consulting engineer, Yakima, Wm. Finnegan, consulting engineer, Los Angeles, and A. R. Carlson, Railways Ice Co., Chicago.

There were plenty of questions for the panel to discuss. The first one was concerned with the storage temperature for frozen foods. It was the concensus that minus 5 F is the most generally acceptable temperature although some products require lower levels and a few others are well kept at around 0 F.

The question on the desirable speed of freezing foods brought out quite extensive discussion. It was indicated that air at lower temperature has a lower capacity to pick up moisture and other things being equal, there is less freezer burn on poultry when frozen at temperature in the range of minus 30 F. It was indicated, however, that this low temperature is modified if the air raises too much in temperature while passing over the food. It was the concensus that economic and other considerations made it unwise to freeze food at too low temperature. In many cases, it is foolish to try because after a layer is frozen on the outside, of larger diameter products, the freezing rates slows down anyway.

The question of size of water crystals and break-down in cell structure was raised. Mr. Finnegan gave a basic discussion of the factors involved and showed the result of extensive investigation. It was his conclusion that the primary cause of cell rupture is not slow freezing but rather re-formation of the tissue structure as a result of internal pressure developed while the outside takes rigid form and the inside is freezing and expanding. This goes on whether the freezing speed is slow or fast. Many other questions came up for discussion and comment, and the symposium proved to be most interesting and informative.

A colored motion picture was presented by Mr. Finnegan to show the results of his investigation in freezing of many different types of foods. Included were several illustrations of the pressure that develops inside cuts of meat while they are being frozen. The distortion of various types of packages under different methods of freezing was shown. Interesting results were demonstrated in the tubular freezer with different speeds of rotation of the container during freezing. It was shown that with this type of equipment, it is possible through choice of rotation speed to disperse the air through the frozen mass or to locate the air cell at the center. By this means, the liquids, juice concentrates, and the like can be frozen in glass without damage to the glass container. Furthermore, the liquid products are homogenous when freezing is completed.

Electrical Servicing

A well illustrated lecture on Electrical Servicing in the Air Conditioning Industry was presented by two representatives of the Westinghouse Electric Corp: J. R. Mobley, St. Louis and M. B. O'Neal, Memphis. The presentation opened with a slide illustrated lecture on motor types, sizes and standards. It was pointed out that motors of a given size by almost any manufacturer now will be in the same frame size which facilitates application and use. The effect of voltage on the torque of the motor was explained. This is important because the torque decrease as the square of the voltage. Other factors such as insulation types and the four basic principles of good motor operation were explained. These are proper ventilation, use of rated voltage, adequate rating and service or safety factor.

A sound color movie was then presented to illustrate the problems encountered in servicing the electrical side of air conditioning equipment. It showed how a service man answers the call for assistance from a user, diagnoses the difficulty and makes needed adjustments and changes. At the conclusion of the movie, additional facts on maintenance and servicing were given in a slide illustrated lecture and a question and answer period followed. All of the attendants were presented with a booklet giving the basic facts and illustrations covered in the presentation.

Modern Cold Storage Plants

Interesting Features of New Cold Storage Plants were discussed by Don Parkhurst, chief engineer, Burge Ice Machine Co., Chicago. For illustration, he described the design and construction of the new freezer storage plant being erected by Continental Freezers of Illinois, Inc., on the Southwest side of Chicago. This plant is 990 feet long by 190 feet wide with storage floor area of 132,000 square feet. Despite its size and the present problems in construction, the contract was let in May and goods were moving into a section of the plant for storage on November 8. It was only six weeks after installation had started on the refrigeration equipment.

This is a one-floor plant with docks extending full length on both sides. Machine room is at the center while the office is at one end. Access to the truck dock is through a center gate and over a 90 foot wide roadway in front of the dock. A dispatcher in a raised location at the middle of the dock directs incoming trucks to one of the forty doors provided along the length of the dock.

Mr. Parkhurst described the features of the construction of the building and its refrigerating equipment. He said the owners felt that the engine room possesses the greatest interest for visitors and customers, therefore great care was exercised to make the engine room a show place in which the efficiency of the equipment bore out the general appearance. Principal equipment in the engine room includes four 100 horsepower second-stage compressors and three 100 horsepower rotary booster compressors.

A large evaporative condenser of unusual design is located on the roof, with a water sump beneath the roof

to avoid trouble with freezing. This condenser which rates 400 tons capacity has two 15 horsepower propeller type fans. The two sections of the condenser, the water pumps and the fans can be controlled to suit condenser capacity to current refrigeration demand. The liquid ammonia is supplied to the refrigeration units by ammonia pumps. The refrigeration units are floor-type placed on piers so that air outlets discharge directly into overhead ducts. They are sized to operate at a 7 to 8 degree temperature difference and have high relative humidity in the storage space. A number of other features of the plant were described by Mr. Parkhurst and a lively discussion followed his talk.

The subject Estimating Air Conditioning Loads was presented in a paper by Don Glaspie. Shelby-Skipwith, Inc. Memphis. He detailed and defined the various portions of the load involved in a complete air conditioning job and suggested that the first step in engineering any job is to determine the requirements which the design must fulfill. For instance, will the air conditioning system be required to provide for processing or comfort cooling or a combination of the two? When this has been determined, it is possible to set up the design conditions including the desired ventilating rate.

Mr. Glaspie then discussed the details of the engineering problem. The first consideration was given to the sensible heat load including, transmitted heat, sun effect, heat introduced by occupants, equipment, and ventilating air. Latent heat sources include people, equipment, product and ventilation. All of these were analyzed to show how they work into the complete estimate. Then Mr. Glaspie proceeded to a discussion of factors used in some rapid estimates of air conditioning requirements. He said these have value to conserve time and money in the preparation of a proposal. They permit determination of whether a system is within the limits of expenditure of the prospective user. On the other hand, he cautioned that wise use of these rapid estimates should always be made and they should be verified before being set up as a guide to design.

Ammonia pump systems

A symposium on ammonia pumps and recirculating systems concluded the engineering program. In addition to Prof. Venemann who acted as moderator, the participants were C. T. Baker, Don Parkhurst and Eugene Rytlewski. The subject had already been brought up in the Bureau meeting on Tuesday evening so there were plenty of questions for discussion. First the different types of pumps were discussed and it was the concensus that centrifugal pumps are satisfactory for low-head duty, while positive pumps are necessary to overcome higher heads. The systems using each were described and there was a suggestion that some service could be best fulfilled by connecting two pumps in series for high head lift.

On the question about proper separation of liquid from the suction gas, it was suggested that gas velocity should not be over 200 feet per minute. There was a general recommendation that it is unwise to skimp on the size of the accumulator or suction trip and that vertical types of traps are preferred because liquid accumulation does not reduce the gas separating area. Best results will be obtained if the liquid head on the pump suction is at least two feet and this head should be made as high as practical. At the same time, all sources of resistance to flow should be kept at a minimum in the pump suction line.

A very definite difference in opinion was evident in regard to the use of refrigerant pumps and positive recirculating systems. The question was asked, "If an evaporator and the suction and liquid connections are of really good design, is there any benefit in having an ammonia pump?" The advantages of both types of design were discussed in some detail, but no particular agreement was reached. The question of feeding liquid into the top or bottom of the evaporator was also discussed but without agreement in regard to particular advantages.

Final Session

THE final session of the convention was called to order at 9:30 a.m. on November 9 by President Howard Peterson. The reports of the convention committees were indicated as the first order of business.

The Credentials Committee report was presented by Frank Chase, New Orleans, Chairman. It showed that credentials had been presented by chapters with a total delegate vote of 116 while 11 member-at-large votes had been certified. The report was accepted by vote of the convention.

The report of the Auditing Committee was presented by Don Byl, Los Angeles, Chairman of the committee. He reported that the Auditing Committee had examined and checked the financial records of the association for the fiscal year just closed. Certified statements of remittances were received from the chapters and these had been checked with the records of national income. The other sources of income had been verified. Expenditures had been checked with the approved bills and the statements of income and expense presented by the secretary and treasurer were certified as correct. The report was accepted by vote of the convention.

Resolutions recommended by the committee were read by George Whitman, New Orleans. The resolutions which were adopted by unanimous vote of the convention expressed appreciation to Memphis Chapter for the fine convention arranged by them. National President Howard Peterson and the officers were given grateful acknowledgment for the excellent manner in which the business of the association had been carried on.

Special praise was given to Professor Venemann and his educational committee. The Refrigeration Course was lauded along with its author, Guy King and it was recommended that full use be made of it to advance the association.

Appreciation was voted to the speakers and participants in the group discussions for the valuable contributions they made to the program. Special thanks were expressed to Mrs. Harry Walling, Mrs. John Creagh, Mrs. Louis Saino and Mrs. L. E. Roberts for their work in the convention and in furtherance of the ladies program.

The passing of the following members was recounted and the convention stood for a silent period in memory of these men:

D. D. Andrews, Oakland, Calif.
George Gaspard, Harvey, La.
P. J. Keyser, Redlands, Calif.
Edwin Libby, Chicago
Lester Lively, St. Louis
Leonard MacNally, Detroit
Robert Schuchart, Pacific, Mo.
W. S. Shipley, York, Pa.
Ernest Turner, Roseville, N.S.W., Australia
William Weddle, Toledo, Ohio
Harry Whyte, San Francisco
Austin Wilson, Salem, Oregon

Mr. Whitman paid tribute to the departed members and concluded with—

A race well run,
A work well done
A victory won
Now cometh rest.

The Nominating Committee report was presented by A. M. Casberg. It placed the following in nomination:

President, A. R. Carlson, Chicago
First Vice President, Alvis Clay, Memphis
Second Vice President, Leo Vivien, New Orleans
Treasurer, Leland Kenagy, Newton, Kans.
Sergeant-at-Arms, H. B. Branham, Pocatello, Idaho

Board of Directors: Regis Gubser, Chairman, Los Angeles; S. A. Cole, Michigan City, Ind.; Leroy Etzel, San Francisco; Elliott Hallowell, Dallas; Bert McKenna, San Francisco; Eugene Rytlewski, Chicago.

Chairman of Educational Committee, H. G. Venemann
Chairman of Membership Committee, Howard Peterson

The report was accepted by vote of the convention. Then the chairman called for any further nominations from the floor. None were proposed. By unanimous vote the nominations were closed and the candidates were elected by acclamation.

The newly elected officers were called forward. Speaking for them President Carlson said they believed they had a big pair of shoes to fill in follow-up of the previous administration. Cooperation among the group, he felt would do much to assure a successful year. Special appreciation was extended to Howard Peterson for accepting the chairmanship of the Membership Committee.

As a representative of the membership, Angus Casberg presented an illuminated testimonial to retiring president Howard Peterson with commendation for the years of effective work and his excellent accomplishments for the association. In accepting the gift Mr. Peterson acknowledged the friendly cooperation and the genuine interest received from the officers and membership. He said it had been a fine convention and that it was a good beginning for a year which challenged our best efforts. He announced that a new type of regional organization would be set up in the Membership Committee.

Special resolutions were passed by vote of the convention to express appreciation to the Peabody Hotel and to Layne & Bowler, Inc., for their important contributions to the convention.

There was a general discussion of association affairs. Several suggested that the usual Friday Morning meeting be eliminated and that the convention meetings be confined to a 3 day period (subsequently the Board of Directors authorized a 3 day meeting.) There was some difference of opinion expressed in regard to modifying the general convention program and providing more group social affairs.

There was a suggestion of enlarged publicity efforts to promote convention attendance through various publications. The convention voted approval of this suggestion. Led by Leo Vivien and A. M. Casberg there was a considerable discussion of methods used to promote the Operating Data Book. It also brought out numerous comments by other members. It was the consensus that more specific and personal work would obtain better results. President Carlson thanked the members who had entered into the discussion and presented their ideas. By vote of the convention it was adjourned at 11:30 a.m.

N A P R E

Question Box

H. G. Venemann, Professor of Refrigeration, Purdue University and chairman of NAPRE Educational Committee, answers members operating problems monthly in this column. Send questions to Chairman H. G. Venemann c/o Purdue University, West Lafayette, Indiana.

Ice Cream Hardening

Question No. 901. Our ice cream is hardened on a belt which runs through a freezing tunnel having an air blast at −30 F. Pint packages are hardened in 45 minutes. We would like to determine the probable hardening time for quart, half-gallon and gallon packages of ice cream. Is there any formula by which the performance on the smaller packages could be used to calculate the probable time required to harden these larger packages?—J. R. H.

ANSWER: Dr. Y. S. Touloukian a colleague of mine at Purdue who specializes in heat transfer very kindly agreed to work up an equation with which the freezing time for any thickness of ice cream package could be estimated.

He submitted one which is very simple:

$T = 7.5\ D^2$

T is the time in hours required to harden from 25 F to 0 F in a blast freezer tunnel with minus 30 F temperature.

D is diameter in feet if cylindrical, or thickness if in brick.

This also assumes that the ice cream has the same properties as that of the pint package which freezes in 45 minutes.

I find that there are several sized packages of pints, quarts, half-gallon and gallons. Using 3-13/16 inch diameter for pints, 5¼ inches for half gallons and 6¾ inces for gallon cylinders, we obtain the following answers: pints, 45 minutes; half gallons, 86 minutes; gallons, 143 minutes.

I would like to have J.R.H. let me know how this formula agrees with results obtained by experience. In the absence of actual data we naturally had to make certain assumptions.—H.G.V.

Compressor Unloading

Question No. 902: We have 4×4 ammonia compressor on automatic control to refrigerate several small rooms. Power interruptions are frequent and the 7½ hp motor driving the compressor has burned out twice. We believe the motor is damaged because the compressor stops during power interruptions and then the motor tries to start it against full head pressure. How would you recommend that we arrange this job so that the compressor would be unloaded before the motor begins to start it?—F. W.

ANSWER: I understand that the Refrigerating Specialties Co. and also Hubbell Corporation of Chicago make an automatic unloading solenoid valve suitable for your compressor. There may be others. The valve is installed in such a manner as to by-pass the discharge gas into the suction line when starting, and to cut-out the by-pass after the compressor gets up to speed. The valve is actuated by a solenoid connected between the motor and the motor starter.

Unless your compressor is equipped with an unloader you should use a high starting torque motor. This will take full load current without overheating.—H.G.V.

Relief Valve Ratings

Question No. 903: The American Standard Safety Code (B9.1) requires very large relief valves on some rather small vessels if I am interpreting it correctly. For instance what size valve is required

for a low pressure ammonia suction accumulator 12 in. diameter by 4 ft long. The rated working pressure is 150 pounds. This vessel requires C = 0.5 × 1 × 4 = 2 lb per min of air discharge capacity in the relief valve. (Paragraph 13.5)

According to Paragraph 12.1.4 the discharge capacity of the relief valve shall be rated at 110 percent of the valve setting. Presumably the relief valve would be set at 150 lb with the discharge capacity rated at 165 lb. According to manufacturer's data a 1 in. relief valve with 2.8 lb per min discharge under these conditions would be required.

A ½ in. valve set to open at 125 lb would have the required discharge capacity at 165 lb. pressure. On this low pressure accumulator a 125 lb setting would be quite satisfactory from an operating standpoint and in my opinion would fulfill safety requirements. Yet the code would require that this valve be rated at 110 percent of 125 lb or 137.5 lb and on that basis it would be too small.

It seems to me the code should provide for ratings of relief valves in steps up to the pressure required for maximum opening. Then a valve could be chosen to conform in capacity to Paragraph 13.5 at 110 percent of the working pressure of the vessel on which it is installed. Would not this procedure provide safety equal to that provided by the present code requirements?—W. R. S.

ANSWER: I have sent this question into the Interpretation Committee of the A.S.R.E. who will meet in Chicago Nov. 5. If they do not reply before I leave for the National convention in Memphis, I will publish it next month. In the meantime let me say that in my opinion the manufacturers' data is in error if it states that a 1 inch relief valve is needed under the conditions mentioned. Table 7, page 18 of the revised code would permit the use of a ½ inch valve for any setting over 75 psig with 75 feet equivalent length of discharge pipe.—H.G.V.

New Questions

Chilling Costs

Question No. 904: Can you explain the various factors in the cost of furnishing and operating a room for chilling meat. The room is 40 ft. by 25 ft. by 10 ft. high. In it we will chill 35,000 lbs. of meat daily. This meat comes from the smoker at about 110 F and is cooled to 38 F. The room has 8 in. brick walls with 4 in. thickness of corkboard insulation all around. All these are interior walls. The floor is on the ground and overhead is a dry storage space, not cooled. Power costs 1¼ cents per kwh.—R.G.M.

Chilling Unit

Question No. 905: I assume a chilling room of the type described would not be refrigerated with coils. What type of refrigerating unit would you recommend for this room?—R.G.M.

Protection for Ice Cans

Question No. 906: Our ice cans are rusting on the outside. It there any finish the ice plant engineers would recommend for application to these cans to retard damage from this rusting? Is metallizing successful?—I.L.S.

News Notes and Chapter Activities

Chicago

BY E. B. JONES

REFRIGERATING engineers have a considerable interest in controls and want to know all they can about them. Chicago Chapter had a duplex session on this subject in which really useful information was presented by Ted LaPlant, Hubbell Corporation and S. A. Gray, Minneapolis-Honeywell Regulator Co. Discussion leader for the evening was Doug Benton, first vice president. He demonstrated he knows how to ask questions to bring out the points of greatest interest to the members.

Mr. LaPlant gave a combined lecture - demonstration. He brought along cut-away valves from their line including their compensated evaporator pressure regulator, solenoid suction stop valve, dual pressure and single pressure evaporator pressure regulators. In a step by step discussion he began with the simple evaporator pressure regulator, discussed the service it performs and showed how the actual valve operates to maintain set pressure in the evaporator. Then he went on to the dual pressure regulator which is a pilot operated valve in which a small solenoid stop valve activates one or the other of the pilot valves to establish an evaporator pressure to accommodate high and low load level conditions.

In connection with all their evaporator pressure regulators, Mr. LaPlant pointed out that the valve port is full pipe size and told why these valves operate without a hunting effect.

The modulating pressure regulator was demonstrated and it was shown how this valve with its electric control motor will assume the position necessary to maintain a fixed condition in the medium being cooled such as air passing through a cooling coil or water or brine from a shell and tube cooler. A potentiometer type thermostat is placed in the cooled medium and controls the operation of this compensated pressure regulator.

In the second section of the program S. A. Gray discussed thermostats and how they operate. He began with the simple thermostat which gives on and off control and is rather familiar to everyone. Then he moved on to instruments giving two stages of control and with sketches on the blackboard showed how these are applied to operating equipment.

Where the plant owner wishes quite elaborate controls are available to provide stages of control from four on up. These can place different compressor units in operation or control speed to accommodate capacity to whatever level is desired. Such controls are available in either electric or pneumatic types. Mr. Gray went on to diagram systems to fulfill different requirements and showed how these are hooked up to give very close regulation in the laboratory or production operations.

The third lesson in the Refrigeration Course was presented by Les Clifford. He had assembled a number of props to demonstrated basic facts in the operation of compression refrigerating systems. The session was completed with a rather thoroughgoing discussion of step by step procedure in charging the system with an explanation of the method utilized to determine when the right amount of refrigerant has been charged.

The following members were initiatew at the meeting: J. F. McKinlay, William Cody, Richard Matyas, Frank Miceli, Paul Ross and Curtis Spatz.

Tulsa

BY MELVIN COFFEY

THE dates of the chapter meetings have been changed to the first and third Monday of each month. The meeting place is the conference room at the People's Ice Co. on First Street bewteen Denver and Cheyenne. By beginning at 7:00 p.m. the meetings are concluded at 9:30. The Refrigeration Course is being presented by our instructor, Michael Quintro who is a professor at Tulsa University and hails from South America.

Instructor Quintro has a fine knack for making the course understandable. He welcomes questions and answers them fully. We are very fortunate to have an instructor of his ability to present this course.

Beatrice Foods Co. was so well impressed by the course and its value to men in this field that they paid to enter 8 men in membership. They are: Earl Brown, Woodrow Chaney, Houston Holland, W. S. Humphrey, Robert Meng, James Park, John Turner and Willard Sellers. In addition we recently welcomed Paul E. Walter of Burt's Good Humor Co.

Los Angeles

By Fred Herr

REGIS GUBSER, chief engineer of the California Consumers Corporation, and chairman of the chapter's educational committee, supplied the program at the October 17 meeting of Los Angeles Chapter, which was in the form of a demonstration and talk on Electrical Instruments and their use by the Operating Engineer.

This was another of the series of electric talks of which Gubser has presented one annually for the past several years. Each time he discussed and demonstrated some phase of electrical equipment as it pertains to the field of the plant engineer. He prefaced his technical discussion with a bit of review of the history of electrical development, especially electrical measuring instruments.

Mr. Gubser emphasized that although all the different types of instruments he discussed are not ordinarily in use by all operating engineers, it was wise for each engineer to make himself thoroughly familiar with all types of such devices so that he may know their properties when the occasion arises.

The speaker displayed different types of electrical meters. Among these was a direct current meter dating from 1900 which had been in regular use at the California Consumer Corporation's plant in Pomona, Calif., until the firm stopped using its own power in 1930. He also displayed a replica of the first type electrical meter—the compass and coil device.

President George Paulick presided over the business session and appointed a nominating committee which was instructed to draw up a slate of candidates for chapter officers and submit a report at the December 5 meeting, at which the balloting will be held. The committee consists of Regis Gubser, chairman, Robert Savage and R. L. Maple.

Membership committee chairman W. R. Burnett reported that 14 applications awaited processing. The applications were approved and the candidates inducted the same night. Among the new members was Abdulla Killsly of the Coca Cola Co., Jeddah, Saudi Arabia.

Other new members were: James E. McNeely and Albert J. Schars, Adohr Milk Farms; Lawrence L. Bromitt, Fullerton; Marshall E. Dehaven, Anaheim Cold Storage Co.; Searl G. Dever, Maier Brewing Co., Los Angeles; Albert T. Peterson, Mundy Refrigeration Co., San Pedro; James N. Moore, Pacific Fruit Express, San Francisco; Gilbert L. Powers, Power Refrigeration Co., Los Angeles; John A. Eckert, unattached; John D. Berry, U. S. Naval Shipyard, Long Beach; Robert P. Wilber, Pacific Fruit Express, Los Angeles; Phil J. Weber, Jr., Weber Wood Works, Bell.

In his final report on local membership activities during the 1951 campaign, Mr. Burnett reported that Los Angeles Chapter had produced a total of 49 new members. Of these, the Union Ice-California Consumers team originated 21 and the Independents team 28. As a result of that outcome Rudi Kettler and W. R. Burnett were obliged to buy a dinner for Donald Byl and Regis Gubser.

Donald Byl of Union Ice Company emerged as the individual winner of the contest with a total of 18 new members to his credit. This earned him first prize—railroad fare to the national convention, plus $25 for expenses. E. T. Quinn won second prize (8 new members) and was presented with a table model radio. Four new members put H. N. Royden in third place. Sixteen others brought in one or more new members for 1951.

Indicative of what sort of action Dallas, New Orleans, Chicago, and other chapters may look for from sunny California in the 1952 campaign is this: Less than 45 seconds after Burnett had completed his report, thus closing the 1951 drive, a new member was signed up for the 1952 campaign. He was Jack C. Snyder of Drayer & Hansen, Los Angeles, who had been guest instructor at the preliminary class at the October 17 meeting.

The meeting scheduled for the first Wednesday in November was eliminated to make room for the NAPRE Fall Festival. This event, formerly known by the more plebian name of Jamboree, was held on the night of November 7.

The program arranged by Ed L. Nelson's entertainment committee (Frank Eccleston, Delmar E. Luedke, Fred Nevins, Douglas M. Picett and J. C. Schobert are the other committeemen) provided some activity from noon to midnight for those who desired to avail themselves of it.

The announcement was a masterpiece of the Nelson word-wizardry that once featured the chapter meeting notices when Ed was secretary. Here's a sample:

"Tucked away under a clump of trees at the brow of a hill is the secluded Palos Verdes Country club. The clubroom plate glass windows look out over the rolling green golf course and clumps of trees to the Pacific Ocean and at night over the myriad lights of the shoreline cities. This is the site we have selected for our evening of fun and as much of the afternoon as you wish to take."

The committee made arrangements to allow members who wished to do so to have noon lunch at the club, play golf in the afternoon, and have dinner in the evening. Several dozen golf enthusiasts availed themselves of the arrangements in the afternoon and later partook of a delicious turkey dinner topped off with heavenly deep-dish apple pie.

The main show got underway at 8:00 p.m. in the clubroom. The excellent show provided by Nelson and his assistants was witnessed by 350 members and guests, which was the figure to which the space limitations restricted the audience.

Dallas

By Franklin Cunningham

TO OPEN our fall meetings we of the Dallas Chapter enjoyed a watermelon feast which was really a success as a get together for the members and their wives.

Our regular meeting of October 8 was so interesting and educational that the time really passed without notice to all of us present. We spent just about all of our time on our first lesson of the NAPRE study course with our very able instructor of-the-night, Obert Irvine, who has had many years experience in the ice business. We plan to answer all questions and work all the problems in the study course as we come to them. As Mr. Levine so wisely pointed out, this is the very best way in which all the members of NAPRE can acquire the full benefits offered us in this course.

Mr. Irvine showed several pictures via the slide of various refrigerant controls including float-electric, thermostatic, solenoid and others. One of the most interesting was a thermostatic switch with the thermo-bulb located on the suction line near the manifold of the compressor. This switch operated a solenoid valve which is placed in the liquid line just ahead of the evaporator. The advantage of this automatic controlling can readily be seen as it would be almost a foolproof safety measure against a floodback, for as liquid started by the thermo-bulb it would instantly close the liquid solenoid valve, thus stopping the flow of liquid and preventing any danger of the threatening floodback.

The subject of hot-gas defrosting was taken up and some of the factors were discussed. We will go into it more thoroughly at next meeting.

Memphis

By Charles Conley

THE big news in Memphis is the 42nd annual convention. It was certainly fine to be together again with our friends from all sections of the country.

The convention program and the numerous speakers who took part in it gave us an opportunity to widen our knowledge considerably in the refrigeration field. It was an opportunity we appreciated very much. Since the convention was here all of our members could take advantage of it. We are getting back to our regular chapter work with renewed interest and enthusiasm.

We were pleased to have Presley O'Daniel and his wife back from Kansas City to visit with us and take part in the convention. Just prior to the convention we welcomed William Kay and L. E. Hutchinson of the Railways Ice Co., back to membership. New members are, Price Evans, Railways Ice Co., Milton Elliss in refrigeration business for himself and Clyde L. Ralph of Arlington, Tenn. From the Ford Motor Co. plant, it was a pleasure to welcome L. H. Quackenbush, Lee McEwen, Wm. L. Tucker, James F. Thompson, Henry Ortholan and John S. Mills to membership.

NAPRE Department

Engine Room Pointers

St. Louis

By K. M. Holaday

FEATURE of the October educational meeting of St. Louis Chapter was an illustrated lecture on selection and application data for evaporative condensers and cooling towers, by F. Ed Ince of Marlo Coil Co. His discussion included not only a description of the arrangement and construction of the equipment, basic principles, test data, and performance characteristics relative to older types of equipment, but also operating problems and precautions to observe to assure maximum overall economy. Mr. Ince's lecture stimulated a lively discussion period during which he elaborated on comments and questions raised by Les Fleiter, Al Loeffel, Sam Modglin, and Harold Suter.

Treasurer Stan Tatllovich reported on the after effects of the chapter's barbecue picnic October 6. A lot of new names on the membership roll was of course the best feature of this report. President Gene Bishop welcomed the new members and urged that other prospects not yet signed up should be invited to take advantage of getting started in the first session of the new study course scheduled to begin with a class meeting November 5.

A brief outline of the first of the King lesson pamphlets and a discussion of how the course is to be conducted, were given by John T. Dabbs, who has been selected to serve as instructor. More than twenty members have been signed up to attend the course.

Detroit

By L. L. Adams

We are indebted to the Stroh Brewery for a fine November meeting. There was a large turn-out of members to accept their invitations to visit the plant and inspect its equipment and facilities. It is a large modern brewery with some of the finest and most modern refrigeration processing equipment in the brewery field.

The meeting began with a complimentary buffet supper. Then the members were divided into moderate size groups to be conducted on a tour through the plant where interesting explanation was given of everything in the operations.

Pittsburgh

By Otto Knoch

At our meeting in October the first section of the Refrigeration Course was presented by Alfred Wiseman. He has taken over the job as instructor and is assisted by James Morris. We had good attendance at this first meeting and expect to have even more interest as the course progresses.

Recently we welcomed to membership, Karl F. Randecker, Carnegie, Pa.

Predictions of Twenty Five Years Ago Reviewed

IN a published article in 1925 this writer said, "As for the number of years our oil supply will continue before exhaustion, that of course is problematical. At the present time the supply is more than ample and it is assumed that there are many undiscovered oil fields in existence in the United States which will sooner or later be found. At any rate we are assured that we have nothing to worry about so far as oil supply is concerned for 25 more years. When 1950 arrives it is quite probable that water power from rivers, water falls and tides, wind power, sun power, etc., will be more economically utilized than at the present time."

As every reader doubtless knows, the first portion of the prediction proved to be correct. As a matter of fact, the oil situation is such at the present time that we can safely look ahead another 25 years for ample oil supply in the United States despite the much greater consumption of oil today. Oil experts are going deeper into the ground and they are also getting oil that was once considered un-get-able.

The latter portion of the above prediction didn't "pan out" any too well. We are getting more power from rivers, true, but very little progress has been made in harnessing tides, wind power, and sun power. We have made some progress atomically, a factor that wasn't even known in 1925.

Some figures were also given in the above prediction on population in 1950. It was predicted that the population would be 148,678,000. According to census figures available thus far it appears that figure is about two million short. We can therefore regard that as a "pretty good" prediction.

The "worst" prediction was this: "** with the improvements that may be made in the economy of automotive engines, no more than 500,000,000 barrels of petroleum will be needed in 1950 instead of the 643,966,000 used in 1924."

In other words, it was "hoped" that engine efficiency would be so much improved that we would use LESS petroleum from year to year. Engine efficiency has been improved, yes, but not that much. The tremendous increase in the number of automobiles was not anticipated. Nor was the unparalleled growth of the airplane industry anticipated. And, to make matters worse, the striking coal miners have driven thousands of fuel users over to petroleum.

This writer fervently hopes that within the next 25 years something will occur along fuel lines to conserve our petroleum so that it will "never" be exhausted.—S.F.W.

How to Make Bolt Less Likely to Break

A BOLT that broke at the root of the last thread, is shown in Fig. 1. It broke because it was not sufficiently elastic. And it broke at the root of the thread because that was the weakest point in the bolt.

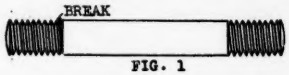


FIG. 1

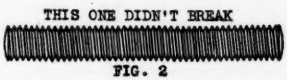


FIG. 2

Fig. 2 shows how the fault was remedied — by threading the entire length of the bolt. By threading the entire length the total stretch does not concentrate on a single thread as was the case in Fig. 1. In Fig. 2 the stretch is distributed over the roots of all the threads. As a result the bolt is much more elastic and tougher and less apt to break.

Another method is to turn down the shank of the bolt between the threaded ends making the unthreaded portion smaller in diameter. It is a good method, but, many mechanics do not possess lathes whereas they do possess threading tools for doing the job as shown in Fig. 2.—S.F.W.

Binders for Refrigeration Course

THERE have been inquiries about the National office furnishing binders for the 17 sections of the Refrigeration Course. Ring binders generally available are not suitable. Arrangements have been made to secure special binders for our members at $2.60 each. Chapter members should order through chapter secretaries. Members-at-large should send orders direct to the National office. It is not practical to stock these binders so place orders by January 1 to insure delivery.

Division of American Warehousemen's Association

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THIS MONTH IN BRIEF

An interview of the Commanding Officer of the Quartermaster Center System outlines the procurement and storage of perishables for the Armed Forces from the standpoint of the government.

Abstracts of additional technical papers presented at Eighth International Congress of Refrigeration.

Public cooler space on October 31 was 69 percent occupied, an increase of four points over the previous month, and freezer space was 83 percent occupied, an increase of two points over the previous month.

The Merchants Refrigerating Company, New York, has under construction a large refrigerated warehouse near Hopkins, Minn.

A booklet on the control of odors has been issued by The National Bureau of Standards. Of particular interest to refrigerated warehousemen is the section dealing with industrial installations, telling how to prevent and reduce odors in refrigerated storage rooms.

THE GOVERNMENT AND PERISHABLES

This interviewing of the Commanding Officer of the Quartermaster System outlines the procurement and storage from the governments viewpoint

THE following interview of Colonel C. F. Kearney, Commanding Officer of the Quartermaster Market Center System was published by the office of the National Association of Refrigerated Warehouses as the first of a series of question and answer sessions with government officials whose jobs concern public refrigerated warehousemen.

At the close of the interview, Col. Kearney stated: "We certainly appreciate and have received the utmost cooperation and help from the cold storage industry—probably more so than from any other industry. They always give us all assistance possible when they are called on."

Col. C. F. Kearney

Question: How about procurement of perishables for the armed forces? Has it been increased as General Feldman announced sometime ago that it would be?

COL. KEARNEY: Yes, it has and the volume is going steadily up.

Question: Has it been increased considerably? In dollar volume, how much are you spending yearly on perishables?

COL. KEARNEY: Yes, the dollar volume for the fiscal year 1951 was $681 million dollars, and for the fiscal year 1950 it was $302 million dollars, and in 1952 we expect it to go over a billion dollars.

Getting Business

Question: How does a warehouseman go about getting business from the Quartermaster Market System?

COL. KEARNEY: Under normal operations, the warehouseman will write a letter to the commercial warehouse field office of the Market Center in his area and request that a contract be sent to him for signature. The commercial warehouse field officer will then check the list of approved establishments with which the army may do business to determine if the warehouse is on that list. If it is, contracts will be forwarded to the warehouse for completion. If the warehouse is not on the list, investigation will be made as to the reason. In most cases this will be because the warehouse has not had a recent sanitary inspection by the Veterinary Corps. If this is so, the Veterinary Corps will be requested to inspect the warehouse. When this inspection is completed and the warehouse is approved, the contracts will then be forwarded to the warehouse for completion.

At times we discover that some products are being stored by the vendors in a warehouse which does not have a contract. Then we must ask that it be transferred to another warehouse in the same locality. This is, of course, a waste of money but it is something that is very difficult for us to control. We would appreciate it very much if these warehouses would contact us about such instances so that we may negotiate a contract to leave this product in the original warehouse and thereby save the first month's storage.

Question: Have you had any recent difficulties on inspections?

COL. KEARNEY: No. Things have been proceeding satisfactorily in that direction.

Question: What types of perishables do you purchase?

COL. KEARNEY: Meat and meat products, dairy products, poultry, yeast, fish, shell fish, fresh fruits, frozen fruits, fresh vegetables, frozen vegetables, frozen fruit juices, and frozen semi-prepared foods for resale.

Question: Your policy for the purchase of these perishables will probably remain about the same?

COL. KEARNEY: Yes. We contemplate no change in policy.

Question: Where is your storage concentrated—is it at ports, at central locations throughout the country, overseas?

COL. KEARNEY: Most of our storage is concentrated on the east and west coasts. This is for two reasons: A. We operate several government warehouses which are located on the coasts. Naturally we attempt to keep these warehouses filled to as near capacity as possible. B. It is necessary to keep higher stock levels on the coasts for shipment overseas.

Question: You say that your concentration of storage is at the port areas, does the existence of the atom bomb have any effect on your thinking regarding any possible changes?

COL. KEARNEY: Not at the present time. If we were to build new warehouses, that would be taken into consideration.

Question: Would you care to say if there is any thought in that regard now as to the possibility of building new warehouses?

Warehousing Problems

COL. KEARNEY: At the present time, no.

Question: What, if any, are your problems in warehousing?

COL. KEARNEY: Our main problem in commercial storage is that some warehousemen take care of our shipments last. Some of them don't particularly care to do business with the government. We have occasioned as much as one week's delay in shipments from commercial warehouses. This has caused considerable expense to the government as we have to order the product from other points and have it shipped by more expensive means so as to make delivery on time. Our camps have limited storage space and it is necessary that these shipments arrive at the right date so that distribution can be made without loss. At some points we must make four and five deliveries a week. In general, though, we are getting fine cooperation from most of the warehouses.

Question: I am just wondering if there is any possible relationship in the delay in your shipments in some places and the possibility that you might be thinking about constructing your own warehouses.

COL. KEARNEY: This is not a dominant factor,—we would not be building warehouses in the interior.

Question: Well now do you have any other problems that should be brought to the attention of the public in regard to your storage?

COL. KEARNEY: That's about all. There are a few—very few—warehouses who have not signed the munitions board contract as drawn up.

This interview with Colonel Kearney sets forth the position of the government on the question of procuring and storing perishable foods for the armed forces. It is reprinted for the purpose of bringing refrigerated warehousemen into closer contact with the government's aims and attitudes, and as such it will provide them with a fund of practical and valuable information on the subject.

Question: Is it because they want to give it further thought or get a legal interpretation?

COL. KEARNEY: Some do not like to make a year's contract—would rather have it on a three-month basis in case prices should go up. By far the greater majority have agreed to the contract.

Question: What new perishables have been added to your list of purchases?

COL. KEARNEY: Items most recently added are the frozen concentrated juices, particularly lemon and grapefruit juices.

Question: Now have you any other perishables on your list—not the frozen type?

COL. KEARNEY: No, I believe not.

Question: How about the use of frozen foods? Is it expanding?

COL. KEARNEY: Yes. For the fiscal year 1948 we used 17 million pounds; in 1949, 33 million pounds; in 1950, 38 million pounds, in 1951, 69 million pounds and we expect to expand considerably more in 1952.

Question: How much storage in transit do you do?

COL. KEARNEY: Very little. Storage space is available throughout the country to such an extent that it is not necessary that we store in transit except on reserve stocks when we attempt to buy on a low market during season of flush production.

Question: How much exporting of perishables do you do? Are your exportations of perishables any larger now than they were in World War II, for instance?

COL. KEARNEY: They do not approach World War II as yet. In 1951 we exported 260,000 tons which was an increase over 1950.

Question: What means of transportation are being utilized in your distribution of perishables?

COL. KEARNEY: Most of the shipments to our storage are delivered to us via rail from the vendors. Our shipments to the installations are primarily by truck.

Length of Time in Storage

Question: Do you have any tables showing the average length of time various commodities purchased by QMS are held in storage?

COL. KEARNEY: Yes. Sixty days' supply in most cases (items which will store safely that long) is the minimum to provide for emergency increase in requirements and also permit disposition of stocks should requirements be reduced by 50 percent. However, this supply may rise to 90, 105 and 120 days during flush seasons. It is our policy to buy as long a supply as possible during flush seasons, thereby taking advantage of lower prices. We have tables of safe storage periods for all commodities.

Question: I am wondering if the advances made in the storing and handling of frozen foods, by refrigerated warehouses, makes any difference in the length of time those commodities rest in storage now.

COL. KEARNEY: Very definitely. We can now safely store eviscerated poultry for longer periods. Expect to do considerable work on packaging to improve storage life of products.

Question: Are you doing any work on packaging right now?

COL. KEARNEY: Experiments going on now on packaging of poultry.

Question: Well, then, your change in attitude in regard to poultry would probably extend into other frozen foods also?

COL. KEARNEY: Yes.

Question: Is the new AMS contract in use? If not, when will it be in effect?

COL. KEARNEY: The contract has been in effect since 1 August, 1951.

Question: Essentially, how does this new contract differ from the old form?

COL. KEARNEY: Warehousemen agree to allocate 25 percent of their space to government in case of critical shortage of space or a national emergency.

Question: Do you contemplate any expansion in your organization?

COL. KEARNEY: Yes, as necessitated by planned increment of armed forces and to otherwise comply and coordinate with the department of the Army Planning.

Question: Why is it necessary for QMS to have a special short-term in transit storage program? How is it working?

COL. KEARNEY: This program does not pertain to the perishable program on the Market Center System.

Question: What is the proportion of cooler to freezer space required for storage of QMS perishables?

COL. KEARNEY: Approximately 80 percent freezer and 20 percent cooler.

Question: I wonder if the figures there might be a direct opposite to what they were say 20 years ago?

COL. KEARNEY: I would be unable to answer that, but I would say, Yes.

Question: Do you have any comparison figures on QMS purchases during World War II, pre-Korea, and now?

COL. KEARNEY: Peak procurement was during fiscal year 1945 when 8 billion, 800 million pounds of perishables were procured. During the fiscal years 1948 and 1949, about 1½ billion pounds per year were procured. During fiscal year 1951 procurement amounted to 2⅓ billion pounds.

Question: Is there any particular area where you are encountering any difficulties in procuring refrigerated warehouse space?

COL. KEARNEY: Temporary difficulty in San Francisco area as QMS is moving from one warehouse to another—and also they have in storage a considerable amount of boneless beef on the west coast at this time. This has been overcome by storing in Los Angeles area. This is the only area we know of where there has been any trouble and this is temporary.

Question: Has QMS noticed indications that they have been able to point to that improvements have been made in the refrigerated storage handling of perishables? Particularly, since the days of World War II?

COL. KEARNEY: Very definitely. On the whole our shipments are expedited quickly. Mechanical handling has helped considerably.

Tax Amortization Issued For Food Storage

CERTIFICATES of necessity for accelerated tax amortization on new food storage facilities have been issued by the Defense Production Administration to the following:

Security Warehouse & Cold Storage Co. Santa Clara, Calif.; two applications for unspecified amounts, on which 25 and 65 percent were certified.

Colquitt Joins Young Married Set

A LEAP into the matrimonial sea was taken October 13 by Joseph Colquitt, secretary National Association of Refrigerated Warehouses when he and Miss Barbara George were married. Miss George was formerly with the National Fisheries Institute, Washington.

Control of Odors—Their Prevention and Removal by Activated Carbon

A BOOKLET on the control of odors has been issued by the National Bureau of Standards. Of interest to refrigerated warehousemen, is the section dealing with industrial control, in which a somewhat generalized discussion is presented.

The first step is usually to make the building fairly tight and to provide fans that will produce a slight vacuum inside the building so that air enters at all accidental or momentary openings and goes out at only one opening. Usually a large volume of fresh air is provided for the comfort of the workers within the building, and the requirement of sufficient tightness is not difficult to meet; but in extreme cases it may be best to use windowless buildings with only artificial light, to cover walls as well as roofs with soldered metal sheets, and to provide entrance and exit, particularly for freight cars and trucks, through double-doored "locks," of which only one door is to be opened at a time. The second step is to confine the odor as much as practicable within definite channels in the plant itself by inclosing the equipment within which the odor principally originates and arranging ventilation so that air-flow is again outward at one point and inward at all others.

Air Volume

In general, it is desirable to keep the volume of air passing through the odor-evolving equipment as small as possible without letting it outside the intended channels or interfering with necessary operations, such as the supply and removal of the products treated. If the process involves cooking or drying, it may be practicable to limit the confined atmosphere mostly to water vapor and to condense it with much of the odor before disposing of the remaining air.

The surest method of disposal of the odor in the foul air is to pass the air through a flame. If the air can be used as primary air (mixed in advance of combustion with the fuel) with gas or oil in a broiler or furnace, organic odors are destroyed completely and without difficulty. Only less certain is combustion by passing the air through a bed of glowing coal. It is ordinarily too expensive to supply fuel for this purpose only, and in case the volume of contaminated air is greater than can be passed through the flame of fuel used for other purposes, it is necessary either to concentrate the odor still further or to depend on dispersing it by discharging to the upper air through a stack.

Use of Activated Carbon

Except, in a few cases, the most practicable method of concentrating the odor is by adsorption, usually by means of activated carbon. A good grade of activated carbon adsorbs most of the organic vapors, which comprise the worst odors, without difficulty. It is necessary only to force the air through a bed of the fresh adsorbent thick enough to insure intimate contact between the solid and all of the air. The material constituting the odor is not destroyed by this process, however, but is held in the porous solid much as water is held in a sponge, and the adsorbent soon approaches saturation.

The adsorbed odor must then be driven off by heating the carbon and is obtained in concentrated form which can be burned without too much trouble. The "reactivated" carbon can then be used again. A continuous system is advantageous in which the fresh carbon and the air to be purified move in counter-current flow in one part of the system, and the fouled carbon and a little air or steam move similarly in the heated zone of another part of the system.

Summary

Perhaps the simplest method used in studying odors is to put small quantities of the materials from which they are evolved into dishes, place them in front of an electric fan, and move them toward an observer until he is able to detect or identify each scent. The distance at which this occurs is a measure of the apparent strength of the odor. By the use of various combinations of odors and volatile "deodorants," the effect of one material on the perception of another is easily observed.

It may be said in summary that the most important general feature for the control of industrial odors is the combination of an inside ventilating system within which odors are conveyed for disposal with a minimum of air and an outer ventilating system in which a large volume of air is used to keep working areas of the plant tolerable, and to dilute whatever odors remain after treatment.

Flood Damaged Plant Rebuilds on Stilts

THE flood waters rose to a depth of ten feet inside the plant of the Midwest Cold Storage company, Fifth street and Kaw river, Kansas City, Mo., in July. That high water stage will be fifteen feet short of the ground floor level in the new building which the company plans to construct.

A post-flood structure, for which the architectural design has been drawn, will be on 25 ft. concrete stilts. It will be three stories and contain 30,000 square feet of floor space. Bids have been asked. An early start on construction is planned.

In the history of the July emergency, the ingenious plan of W. Irving Moss, 4423 Roanoke parkway, in saving five million pounds of perishable products, was recorded.

After the refrigeration system had been ruined by the onrush of water, Moss, vice-president and general manager, rushed 250,000 pounds of dry ice into the plant.

A rowboat with outboard motor, bouncing over the swift water on 24-hour schedule, was a principal means of transportation. There was a 1-trip assist from a navy landing craft and an engineer's boat.

When the water had receded an emergency fill was made from the Twelfth street bridge to the dike to allow removal of the products by motor freight. Value of the perishable products was about 2½ million dollars.

Moss detailed this harrowing experience in an application for an R. F. C. loan. His company was allowed $400,000.

The new building, which will include generating equipment for emergency use, will replace five buildings in the 17-building plant layout. These temporarily abandoned structures will be reconverted to use as flood protection plans progress, Moss said.

In the interim since the flood, the ice plant at the storage company has been placed back in operation, coolers are functioning and a limited amount of freezer facilities are available.

Moss said his firm is the first in the flood area to adopt the high stilts plan in rebuilding. A similar architectural scheme was drawn in the tentative plan for construction of apartments in residential redevelopment of the Armourdale area of Kansas City.

Warehouses Join in Expansion Program

A GREAT expansion program is currently under way among the nation's public refrigerated warehouses, it was announced recently by Jerry P. Johnson, President of the National Association of Refrigerated Warehouses.

The NARW official has just returned from an extensive tour of the Association's regional chapters, during which he addressed groups of warehousemen in Ft. Worth, Chicago, New Orleans, Cleveland and New York City.

"Our people are thinking in terms of modernizing for efficiency of operation and of expanding to take care of the rapidly increasing needs for perishable food storage facilities," Mr. Johnson said.

"The industry has been growing at an estimated rate of 5,000,000 cubic feet per year since the end of World War II," Johnson stated. "The bulk of this additional space is equipped to provide the sub-zero temperatures required for the storage of frozen foods."

"Refrigerated warehousemen are acutely conscious of the critical importance of safeguarding the nation's perishable food supply through proper refrigeration and handling," Mr. Johnson continued.

"Industry thinking these days is done in terms of: (1) Anticipating storage requirements of both the civilian and military populations; (2) keeping abreast of the latest developments in cold storage techniques; (3) operating industry facilities at peak efficiency so as to guarantee continuance of the low service charges presently in effect."

Combined Chapter Meeting in New York

A COMBINED meeting of the North Atlantic and Great Lakes Chapters of the National Association of Refrigerated Warehouses will be held at the Belmont-Plaza Hotel in New York December 10-11. Chapter chairmen Jerry Johnson of the North Atlantic and Harry Foster of Great Lakes promise a program of vital interest to all warehousemen. Members of the Cold Storage Warehousemen's Association of the Port of New York and the New Jersey Association of Refrigerated Warehousemen also have been invited to attend.

Merchants Refrigerating Establishes Warehouse in Minnesota

A LARGE refrigerated warehouse is being constructed in Hopkins, Minn., near Minneapolis by the Merchants Refrigerating Co., New York City. The one-story building, 280 x 450 feet occupies approximately four acres of a sixteen-acre tract of land on the Minneapolis & St. Louis Railroad.

Now nearing completion at a cost of nearly two million dollars, the plant will contain 1,750,000 cubic feet of refrigerated space. It will be equipped with two blast freezers with a capacity of 100,000 pounds of products daily. The plant, second established by the company in the midwest, is part of a program of diversification to complement four distribution area warehouses in New York City and Jersey City and Newark, N. J.

A. N. Otis, Merchant's president, said the Minneapolis district was selected because of its proximity to the large producing territory of Minnesota, North Dakota, South Dakota, Wisconsin and northern Iowa. Constantly increasing freight and labor costs make it more necessary than ever that merchandise be moved as directly as possible from point of production to point of consumption, he said.

Furthermore, Mr. Otis believes the growing importance of the Pacific Coast states, both because of population increase and this country's activity in the Pacific, makes it necessary to hold perishables where they can be moved either east or west to the most advantageous market in any particular period.

Each room in the new warehouse may be converted from time to time to various temperatures the products require. The corridors will be refrigerated so food will be protected at all times. One side of the building will be devoted to handling railroad cars, with loading or unloading of 14 cars possible at one time. The other side will be used for handling products by truck along a 300-foot truck dock.

John B. Frane who has had more than 25 years' experience in refrigeration of perishable foods, will manage the new plant.

Principal contractors for the buildings are the Turner Construction Co., general contractors; Armstrong Cork Co., insulation; Carrier Corporation, refrigeration.

Eighth International Congress Abstracts of Papers

A NUMBER of technical papers of a high order of merit were presented at the Eighth International Congress of Refrigeration held in London, England, August 28 to September 4. Abstracts of some of these were published in the October ICE AND REFRIGERATION. Others of the more important are abstracted as follows:

Moisture Penetration by G. G. Lilley. — The migration of moisture through and into materials has long been a problem in the refrigeration industry and its cause is still imperfectly understood. In many cases the passage of water can be accurately forecast by considerations of vapor pressure difference alone, but in others, especially where humidities are high, results become more unpredictable.

When using the vapor pressure method the moisture content of the material under test is often ignored, even when there are large concentration gradients in the material. Results given by several investigators show that these moisture concentration gradients have an effect on the rate of moisture flow. Data on the moisture content of many materials are available and a relationship can be expressed between concentration and relative vapor pressure.

Using this relationship and an empirical factor of relative humidity an overall equation linking vapor pressure and moisture concentration is possible, from which it is feasible to deduce a net rate of moisture flow.

Surface Tension of Refrigerants and Their Mixture with Oils By P. Laine and R. Mock.—The origin of the investigation was the statement by constructors that metal-to-metal joints suitable for ammonia and methyl chloride machines were not tight for Freon-12.

We thought that the readiness of Freon-12 to pass through the joints of compressor covers was due to lowering of the central pressure in the pores filled with oil, and that, consequently, the surface tension of Freon-12 and its mixtures with oil must be small.

Measurement of the surface tension of Freon-12 and of methyl chloride has confirmed our hypothesis. Our measurements have been extended to ammonia, sulphur dioxide, Freon-22 and Freon-114.

Mixtures of oil and methyl chloride and oil and Freon-12 have also been studied.

As a result of our work, the method of test by immersing in a liquid and filling with gas under pressure is discussed.

Investigation of a New Dew-Point Hygrometer by L. Prins.—A new dew-point hygrometer which is especially intended for the determination of humidity for low moisture contents has been developed by H. Glaser. The characteristic features of this method are the good ventilation of the mirror and the artificial increase of the partial pressure of water vapor by compressing of the air under test.

Such an apparatus was tested for air having a dew point between 0 F and -11 C. Check measurements were made with an absolute method, the moisture content of the air being frozen out. Good agreement was obtained between the two methods, within the limits of experimental accuracy. The same result was obtained with comparative measurements which were made outdoors with other hygrometers. Depending upon the accuracy of reading, the measuring error of the new dew-point apparatus amounts to 1 to 2.2 percent of the investigated moisture content.

The Change of the Energy Content of Foods in the Freezing Region by Horace E. Staph and Byron E. Short —The energy removed from foodstuffs in the freezing zone may be determined by using the latent heat of fusion of the water which is frozen, and the specific heats of the solids, of the water ice and of the fats. In doing this, it is assumed that the effect of the heats of solution is negligible, and that the fats do not undergo a phase change in this region, and that specific heat of the liquid water is the same as that of the water ice. It was further assumed that the fats were in the solidified region and that the water soluble solids can be treated with the other solids. A sample curve, c_p versus temperature, for carrots indicates the reasonableness of these assumptions.

The initial freezing point is taken as the beginning of the freezing of the water and is not considered to be related to the initial phase change for the fats. For most foods, all of the water appears to be frozen between the initial freezing point and -10 F to -30 F, the average of the final or complete freezing being nearer -30 F.

Non-Freezing Injury to Plant Tissues Caused by Exposure to Low Temperatures by W. H. Smith.—The study of non-freezing injury to plant tissues exposed to relatively low temperatures has been carried out mainly on edible fruits and vegetables. The primary factors concerned are level of temperature and duration of exposure. The effects of low temperature are cumulative. Injury may be avoided by limiting the period of exposure or with some varieties of plums, warming before visible injury has occurred, after which the fruit may be returned to low temperature for a further period of time.

Susceptibility varies widely with different fruits with variety, with climate and season, maturity and soil type. Low temperature injury may be attributed to an irreversible displacement of metabolic balance. Some support may be found for the theory that the accumulation of a cell-poison may precede visible injury and that injury occurs when the rate of accumulation has exceeded the rate of dispersal for a sufficient length of time.

The Action of Enzymes in Concentrated Solution and in the Dried State by M. A. Joslyn.—The storage life of many dehydrated and frozen foods, particularly those of plant origin, may be increased by preliminary heat treatment which among other things may inactivate enzymes. The present status of our knowledge of the role of enzyme activity occurring during the storage of such products is reviewed and the meagre data on the effect of concentration or dehydration and of freezing on the activity of the few enzyme systems which have been investigated is presented.

It is generally believed that enzyme activity decreases with decrease in available water concentration, but the nature of this effect is not known. The fact that concentration of substrate tends to protect the enzyme and to allow its activity at higher temperatures may explain the greater susceptibility of concentrated foods to storage deterioration at higher temperatures. The effect of freezing on the colloidal properties of enzyme suspensions is fairly well established, but the effect of concentration on these properties is not known.

A more intensive investigation of the structural aspects involved and of the possible inbalance in natural sequence of enzyme catalyzed stepwise reactions involved in living process is necessary.

A Review and Discussion of the Problem of Drip Formation in Meat and Fish by W. A. Empey and A. Howard.—Various aspects of the problem of drip formation in meat and fish are presented and discussed in this paper. The authors have reviewed most of the published papers on this subject up to the year 1947, and have dealt also with some unpublished material up to the end of the year 1950. The review commences with a definition of the nature and composition of "drip" and gives an account of the various methods for its estimation.

This is followed by a summary of the factors which have been reported to influence the extent of drip. The various theories which have been proposed to account for the formation and loss of drip are then outlined. Consideration is then given to the possible methods for the control and elimination of drip. In the final discussion the authors put forward suggestions for further experimental work on this problem.

Cooling of Perishable Produce in a Saturated Atmosphere by L. Fontanel. —The advantages of pre-cooling produce before it is sent out is well established, but rapid cooling of produce before storage has advantages which are at least as important:—

(1) Slowing down of changes in, and rotting of, the produce.

(2) Pre-cooled produce can be put into the store without affecting the temperature or degree of humidity of the store, and without any condensation on produce in the store.

(3) Reduction of exposed surface, and the ability to store the produce at once in its proper place.

But this pre-cooling needs a fast circulation of air, which can have harmful effects on the produce, resulting in drying and loss of color, flavor and turgidity.

Circulation of a saturated atmosphere considerably reduces the risk of such damage, provided that liquid water is not injected and that condensation on the produce does not occur.

Description and photographs of pre-cooling installations using re-circulation of ice-cold water through atomizers, applied to meat, fruit and vegetables.

Some Cold Storage Practices in Canada with Particular Reference to Jacketed Holding Rooms by O. C. Young.—In Canada the difficulties experienced with the holding of frozen fish for extended periods in cold rooms with cooling coils exposed in the rooms gave rise to modifications which amounted to jackets on all walls and floors exposed to external (warm) conditions. This paper describes the types of jackets used for rooms differently located in plants, and shows how the jacket principle was applied throughout an entire plant recently built on the Pacific Coast.

Distribution of Brine Speed in Ice-Making Tank by Inosuke Kimura.—In an ice-making tank irregular distribution of brine speed causes unequal rate of freezing water, and consequently, different depth of core water in each can of a row across the brine flow. Thus, the difference in the depth of core water at a definite time may serve as a measure of variation of brine speed along the row.

On this point of view, we can obtain an approximate view of brine speed distribution along a row by a statistical comparison of the rank number attributed to each can according to the relative depth of core in it. If we work out the above procedure on every row in the tank and summarize the results, we can obtain a general view of brine speed distribution over the whole tank. Results of experiments in this line on our ice-making tank are given.

New Bill Would Equalize Duty on Import Goods

A BILL introduced in Congress recently to place private warehousemen on an equal footing with government-operated foreign trade zones in handling import merchandise on which customs duty is to be collected, has been withdrawn. Technical discrepancies in the language of the act made withdrawal necessary.

In its place, H. R. 5305 has been introduced by Representative Hale Boggs (D. La.) and will, if passed by Congress, accomplish the original purpose of amending the Foreign Trade Zone Act of 1934, so as to remove the government from direct competition with private industry in the warehousing field.

Packing Costs for Citrus Decreased by Volume

VOLUME is the key to low-cost citrus packing, says a U. S. Department of Agriculture report. It costs 11 cents more to pack a box of citrus fruit in a small packinghouse than in a large one, according to the recent study of 31 orange packing cooperatives in Southern California made by the Cooperative Research and Service Division of the Farm Credit Administration. It is published as Circular C-138, "Citrus Packinghouse Costs in California", and is available from the Farm Credit Administration, U. S. Department of Agriculture, Washington 25, D.C.

The study shows that costs decrease as volume increases, with a 20 percent increase in volume reducing costs three cents a box. A 30 percent increase in volume reduces costs six cents a box and a 50 percent increase decreases costs 11 cents. Thus, considerable saving can be made where it is possible for two or more nearby small packinghouses to join forces and carry on their activities from one large plant.

Small associations usually cannot make as good use of buildings and equipment. Large associations studied used only about 110 square feet of floor space per 1,000 boxes packed, whereas small associations used over 160.

Several methods of reducing costs were explored, and a number of possibilities are pointed out in the circular. Costs can be lowered by new methods of packing and the use of different types of shipping containers. New handling methods such as bulk handling of fruit from grove to packinghouse offer possibilities in reducing costs.

Southeastern Chapter Membership Drive

UNDER the leadership of W. B. Haggerty as chapter chairman, the Southeastern Chapter National Association of Refrigerated Warehouses is currently conducting a drive to boost chapter membership to 100 companies by the time the New Orleans convention rolls around next May.

In a letter to prospective members, Mr. Haggerty said in part: "The writer is confident, after having attended the last National meeting in Boston and the Southeastern Chapter meeting in Atlanta this spring, that at those two meetings I picked up ideas and connections that mean thousands of dollars to our company per year."

Refrigeration Research Foundation Meeting

THE annual meeting of the Refrigeration Research Foundation will be held at the Roosevelt Hotel New Orleans, La., May 2-4, 1952 immediately preceding the annual conventions of the American Warehousemen's Association and the National Association of Refrigerated Warehouses which opens Monday, May 5.

Advancement of the science and art of refrigerating commodities will be discussed by leading professional men and women in the field of refrigeration science and by leaders in industry.

The meeting will open with an open session of the scientific advisory council of T.R.R.F., and on the second day there will be a continuation of the same meeting. On Sunday, May 4, the annual T.R.R.F. membership meeting will be held, followed by the annual meeting of the Board of Governors, which will adjourn for the annual "Sazerac" party of A.W.A. 6-8 p.m. Monday morning a breakfast meeting will be held with the Executive Committee.

During the rest of the week, N.A.R.W. and T.R.R.F. will merge their programs of general industry interest with a view of creating the best industry conference possible. A joint N.A.R.W.-T.R.R.F. meeting held in Boston in 1951, an initial venture, was so successful that it has led the program committee to go all the way in merging these programs. They will be of outstanding interest to all warehousemen as well as to members of T.R.R.F.

Quincy Market Plant for Portland, Maine

A SITE for a new refrigerated warehouse has been purchased in Portland, Me. by the Quincy Market Cold Storage & Warehouse Co. Main office of the company is in Boston, Mass. where they operate a group of plants. They also have a plant in Watertown, Mass. Officials of the company report that plans for the new plant are in preparation, but that details are not yet available on the size, design, or special features of the structure.

Newspaper reports from Portland commend the projected construction of the plant. They point out the importance of the production of perishable agricultural products in the surrounding territory in Cumberland, York, Oxford, and Androscoggin Counties, which this plant will accommodate. Fishery products are also increasing in importance and dollar volume along the Main coast.

October 31 Cold Storage Holdings

PUBLIC cooler space was reported to be 69 percent occupied on October 31, an increase of 4 points since the previous month but 3 points below average occupancy for this time of year and the storage level on October 31, 1950. All regions, with the exception of the East North Central, showed increases in cooler space utilization during October. A 3 point decrease was reported for the East North Central region. Regions exceeding the national average occupancy of 69 percent were the Middle Atlantic, East North Central, and East South Central.

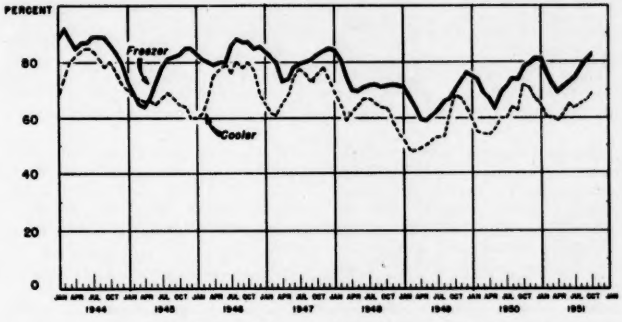
Public freezer space utilization increased 2 percentage points during October raising the occupancy level to 83 percent on October 31. This was 5 points above average occupancy and the level reported last year at this time. Freezer occupancy in the West North Central region remained the same as the previous month while all other regions showed increases. Cooler and freezer space was 85 percent or better occupied in the following cities: Buffalo, Detroit, Norfolk, Nashville, and Memphis.

Net increases in both cooler and freezer commodity weights raised the total weight of stocks in refrigerated warehouses to 4.8 billion pounds on October 31. The 2.7 billion pounds of foodstuffs stored in cooler space was a 48 percent increase over September 30 cooler weight. The net into-storage movement of fresh apples accounted for the greater part of this weight increase. Freezer-stored commodities amounted to 2.1 billion pounds on October 31, indicating a net weight increase of 2 points during October. Percentagewise, poultry showed the greatest net increase followed by veal, lamb and mutton, beef, and frozen vegetables.

October gains for fresh apples in storage amounted to 19 million bushels thereby raising total stores to 26 million. A year ago more than 34 million bushels were in storage. October 31 stores of fresh pears—3 million bushels— were approximately half the amount in store the previous month and compares with 2 million bushels on hand last year.

Moving counter to the seasonal pattern, frozen fruit stocks were reduced by 4 million pounds during October leaving 384 million in storage. Last year a net increase of 26 million pounds were reported, while the 5-year average October increase was a million pounds. Despite this contra-seasonality, current supplies were 6 percent greater than last year's stores and 4 percent greater than average for this time of year.

Frozen strawberries on hand October 31 reflected a net withdrawal of 8 million pounds from the previous month; frozen cherry stocks were reduced 5 million pounds. On the other hand, holdings of grapes almost doubled since September 30 and slight gains were reported in stocks of apples, peaches and plums and prunes. Frozen orange concentrate stocks declined to 12 million gallons, 3 million gallons less than September 30.



Occupancy of Refrigerated Warehouses 1944-1951

TABLE I—COLD STORAGE HOLDINGS IN PUBLIC, PRIVATE AND SEMI-PRIVATE WAREHOUSES, APPLE HOUSES AND MEAT PACKING PLANTS (000 LBS.)

	Oct. 31, 1951	Sept. 30, 1951	Oct. 31, 1950	Five-year Average
Meat and meat products, lbs.	498,183	521,665	404,740	362,586
Lard and rendered pork fat, lbs.	29,596	28,372	52,128	55,785
Frozen poultry, lbs.	258,810	166,242	217,999	224,603
Creamery butter, lbs.	94,812	113,501	208,228	113,634
American cheese, lbs.	227,985	239,500	276,930	176,589
Other cheese, lbs.	21,182	23,531	26,013	23,868
Shell eggs, cases	513	958	502	1,618
Frozen eggs, lbs.	119,885	151,293	104,378	145,647
Apples, bu.	26,271	7,684	34,451	31,677
Frozen fruits, lbs.	384,323	387,929	363,602	368,465
Frozen vegetables, lbs.	549,019	515,766	457,573	371,193
Frozen fish, lbs.	171,424	166,100	166,105	151,970

TABLE II—PERCENTAGE OF SPACE OCCUPIED BY PUBLIC COLD STORAGE WAREHOUSES (APPLE HOUSES EXCLUDED)

	Net Piling Space (000 cu. ft.)		Oct. 31, 1951 (%)		Sept. 30, 1951 (%)		Oct. 31, 1950 (%)		5-Year Average (%)	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	2,928	5,907	56	92	49	90	73	72	68	78
Middle Atlantic	35,761	31,664	70	87	59	84	73	87	72	83
East North Central	26,858	23,673	72	84	75	79	78	77	75	77
West North Central	8,405	13,460	68	71	65	71	85	77	78	77
South Atlantic	9,193	6,691	69	87	65	79	60	77	65	76
East South Central	2,926	3,317	84	89	75	87	79	83	76	79
West South Central	6,858	7,423	63	65	61	62	62	56	64	62
Mountain	1,315	1,443	52	86	46	84	73	79	76	73
Pacific	14,528	21,020	64	86	63	84	64	78	80	64
United States	108,772	114,598	69	83	65	81	72	78	78	72

TABLE III—PERCENTAGE OF SPACE OCCUPIED BY PRIVATE AND SEMI-PRIVATE REFRIGERATED WAREHOUSES AND MEAT PACKING PLANTS (APPLE HOUSES EXCLUDED)

	Private and Semi-Private Warehouses						Meat Packing Establishments					
	Net Piling Space (000 Cu. Ft.)		Space Occupied—Per Cent				Net Piling Space (000 Cu. Ft.)		Space Occupied			
			Oct. 31, 1951		Sept. 30, 1951				Oct. 31, 1951		Sept. 30, 1951	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	7	412	50	89	56	81						
Middle Atlantic	1,257	1,787	65	88	64	88	1,880	258	65	83	86	58
East North Central	6,907	5,371	69	46	64	45	4,389	1,499	79	79	83	80
West North Central	633	2,434	81	81	67	68	12,177	5,867	90	64	86	68
South Atlantic	432	2,892	84	68	25	76	914	237	87	100	86	98
East South Central							399	274	47	38	82	91
West South Central	237	211	76	91	69	91	2,525	501	100	100	97	100
Mountain	106	203	91	98	98	95	751	461	89	98	99	100
Pacific	6,006	4,541	28	83	42	87	2,662	480	90	88	89	95
United States	15,585	17,851	54	70	56	69	25,697	9,577	86	71	87	74

NOTE:—Blank spaces indicate that insufficient returns were received.

Frozen vegetable stocks reflected twice the average October gains to reach a national total of 549 million pounds. During October, the net into-storage gain was 33 million pounds which compares with 15 million reported during October for the 5-year period ended 1950, and 27 million pounds reported last year. According to previous performance, frozen vegetable stocks were at their annual peak on October 31 and also at an all-time record high. Current holdings exceeded last year's peak supplies by 20 percent and were almost 50 percent greater than average October 31 stores of frozen vegetables.

Cream in storage on October 31 amounted to 33 million pounds, a reduction of 6 million from the month previous. Slightly greater than average net withdrawals of butter reduced national holdings to 95 million pound which compares with 208 million in store last year and 114 million in storage on October 31 during the 5-year period ended 1950.

American cheddar cheese stocks amounted to 228 million pounds by the end of October as net withdrawals of 12 million pounds were reported during the month. Holdings of all cheeses were down 14 million pounds from a month earlier and the total amounted to 258 million pounds on October 31.

Shell Eggs

About a third the average October 31 stores of shell eggs were on hand with only 513,000 cases reported in storage. Frozen egg holdings were reduced to 120 million pounds, while dried egg stocks totaled 22 million pounds by October 31. The shell equivalent of all eggs in storage was approximately 6 million cases.

Frozen poultry stores increased 93 million pounds during October and by the end of the month totaled 259 million pounds. This seasonal gain was a third greater than average and about a fifth greater than the October increase last year. October 31 holdings of turkeys amounted to 83 million pounds which were the largest on hand for this time of year since 1946.

National gains in beef storage stocks brought the total to 117 million pounds by October 31, while pork holdings declined 44 million pounds to 282 million; other meat items reflected a 2 million pound net decrease during October. Beef in storage was a little more than two-fifths greater than average for this time of year and almost a fourth greater than last year's holdings. Pork net withdrawals during October were more than twice the net withdrawal last year, but supplies were still greater than average and those of a year earlier. Total meats in storage amounted to 498 million pounds which compares with 405 million on hand in 1950 and 363 million pounds in store October 31 during the 5-year period ended 1950.

Frozen and cured fishery products amounted to 204 million pounds on October 31. Cured fish holdings decreased 4 million pounds during October to 33 million pounds, while frozen fish stocks increased 5 million to 171 million pounds.

Storage Outlook

According to historical performance, the cooler occupancy level reported on October 31 is the annual peak. The occupancy reported this October 31—69 percent—was 3 points below average and the level reported last year. During November, cooler utilization should fall off and by the end of the month a decline of one point in cooler occupancy should prevail. Freezer utilization is still on the upward cycle as the peak is not reached until the end of the year. An increase of one percentage point by November 30 is likely if the 5-year average pattern obtains this year.

Canadian Holdings of Fruits and Vegetables

THE Dominion Bureau of Statistics of Canada, Agricultural Branch, reports the following commodities held in cold storage on October 1, 1951.

Frozen fruit holdings in storages and factories October 1, 1951 amounted to 24,880,000 pounds as compared with 23,957,000 pounds September 1, 1951 and 18,108,000 pounds October 1, 1950.

Stocks of frozen vegetables in storages and factories on October 1, 1951 amounted to 12,880,000 pounds as compared with 13,690,000 pounds September 1, 1951 and 13,061,000 pounds October 1, 1950.

Shoemaker Honored by U. S. Chamber of Commerce

GARTH SHOEMAKER, Elmira, N. Y., has been named a member of the Northeastern Divisional Advisory Committee of the U. S. Chamber of Commerce. This committee is composed of local business and organizational leaders whose duty it is to check and report to the U. S. Chamber of the progress of various Chamber-sponsored projects carried on at the community level. Mr. Shoemaker is chairman of the Public Information Committee of the National Association of Refrigerated Warehouses.

Quebec Official Cites Need for Warehouses

THERE are not enough cold storage warehouses to hold Quebec's farm products, according to the Hon. Laurent Barre, Minister of Agriculture for Quebec. Speaking at the closing banquet of the Quebec Gardener's Association's annual convention, Mr. Barre urged farmers to establish cooperatives to build cold-storage warehouses. He promised the cooperation of the Provincial Government and said the wholesalers would make it profitable for themselves.

THE ICE INDUSTRY

NATIONAL ASSOCIATION OF ICE NDUSTRIES

Executive Offices
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Executive Secretary
Guy W. Jacobs, Washington, D. C.

President
Wm. J. Ayers, Memphis, Tenn.

First Vice-president
Paul H. Andres, Oklahoma City, Okla.

Second Vice-president
E. L. Gunn Jr., Atlanta, Ga.

Treasurer
Geo. Steers, Jr., Kalamazoo, Mich.

THIS MONTH IN BRIEF

The annual report of Guy W. Jacobs, secretary of the National Association of Ice Industries presented at the annual convention, reviews the accomplishments of the past year and outlines the program and new plans of the association for the coming year. Report of the Public Relations Department was made by E. L. Gunn, Jr. and of the Research and Engineering Department by Leonard Swartz.

An experimental study on the use of ice for keeping sweet corn fresh shows that consumers will use more fresh corn and pay a higher price for it when it is iced.

An exhibit of freshly dressed chickens on ice shown at a home show at Jasper, Ind., was illustrated and described in a feature article in the Chicago Tribune.

The Greencastle (Ind.) Chamber of Commerce staged a broiler show as part of the Fall Festival. Prizes were awarded to 4-H Club boys and girls for the best dressed chickens.

The Unit association secretaries held their annual meeting at the annual ice convention at Houston, Texas November 13 where policies and plans were discussed.

The National Association
—A Report to the Ice Industry

GUY W. JACOBS
Executive Secretary
National Association of Ice Industries

AS YOU know, I come before you today wearing a different hat, figuratively, at least, than the one I had on a year ago. At that time, I spoke only for the public relations department, but now I speak for the entire Association staff. I feel very deeply my responsibility in this capacity. To me, it is a double-edged responsibility; first, that of speaking to you on behalf of my fellow staff members, and, secondly, that of speaking to you for the first time as the Executive Secretary of the Association.

Before narrowing my scope down to the National Association, I want to give you a view of the entire industry, as we see it, at this partciular time. To begin with, I will run over the highlights of the annual tonnage report. The figures are fairly indicative of our major trends, and they also serve as a guidepost for the direction we should take.

Ice Tonnage

Total tonnage for 1950 was slightly under 34 million tons, a drop of 18 percent compared with the tonnage for 1949. Combined sales of all processed ice, however, were nearly 4 million tons—or only 4½ percent less than the previous year.

Nineteen-fifty was a year when the weatherman saw fit to give us a second consecutive beating; at least some of that 18 percent drop in the total tonnage can be blamed on him. This year, he did better by us but not quite well enough to completely stem the tide. The results of the preliminary survey for 1951 indicate that the over-all tonnage of the industry will show a further decline of approximately 5 percent this year. It is encouraging to note, however, that in those areas where summer temperatures were up to normal, tonnages held their own, and in some cases, actually increased.

But important as it is in our business, I am not here to talk about the weather. Instead, let's move on in that tonnage report to look at the figures on processed Ice. A 4½ percent drop in the sale of cubes, crushed and sized ice stacks up hopefully against an 18 percent decline in total sales. It means that processed ice sales tend to hold their own despite low temperatures. It means that here is the market for the iceman to go after—and to go after hard. It not only is a market of many possibilities, but it is a profitable market as well.

Increased Sales of Processed Ice

Is this market for processed ice simply holding its own, or is it increasing? Look all around you for the answer. There are more restaurants, hotels, and taverns in this country than ever before. There are more grocery stores than ever before, with more produce, poultry, fish and meat to be kept fresh. There is more sweet corn, celery and countless other commodities to be hydro-cooled. And there are several million more families in America than there were ten years ago, each one a potential customer of yours. Those families are having parties, not just in summer but all year 'round. They are buying picnic chests by the thousands—the sale of these literally skyrocketed this year. They are making ice cream at home. They are all prospects for processed ice at one time or another.

The only survey we have taken on this domestic usage was back in 1949. As you may remember, we found then that 48 percent of the families using mechanical refrigerators were buying extra ice for special occasions. Forty-eight percent was about 14,000,000 families. I venture to say that the figure is considerably higher now. In other words, at least half the homes which we thought had closed the door to us have now invited us in again. The question is, are we going to be smart enough to put our foot in that door and make the invitation a profitable one.

Let's take another look at the tonnage report and see how many ice companies are making that wise—and necessary—move to processed ice

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Presented at 34th annual convention National Association of Ice Industries.

service. This was the mose encouraging part of the report, to me. Fifteen percent more companies were providing crushed ice in 1950 than in 1948. Thirteen percent had added sized ice in that two-year period, and nearly seven percent more were offering ice cubes. Of the 2,000 plants we surveyed, over one-third were selling ice cubes. Better than 11 per cent were providing all three varieties of processed ice, and 28 percent of the plants were providing at least two classes.

This trend is encouraging, but I keep wanting to say, "Faster! Faster!" to the entire ice industry. We must get more companies around that well-known corner in a hurry. One-third of our plants providing ice cubes is all right, but it isn't nearly enough—especially when every plant has a potential market for ice cubes. There couldn't be any more basic truth in business than this; you must supply what people want if you want them to be customers.

In spite of the fact that figures on over-all national tonnage during 1950 were all down from the preceding year, remember, please, that they cover companies which have shown a loss and companies which have shown a gain. Yes, we do have companies whose business is on the increase—simply because they are doing what every ice company should do. They are studying their customers' needs, improving their service in every way possible, and carrying on vigorous promotion. On Thursday you will hear several men from such companies tell you how they do it. These are the optimists in our Industry—and their own efforts are the reason for their optimism.

Incidentally, year after year at ice conventions we have heard speakers mention other industries which, like ours, once thought—erroneously—that they were safe from competition. I read about one of these the other day that had not occurred to me before. It was the handkerchief industry. Just think how much Kleenex and the other tissues have cut into the handkerchief monopoly. The item I read said that the handkerchief people are spending several hundred thousand dollars to rebuild the market they had lost. They may have waited too long, but at least they have banded together for a strong concerted effort—to rebuild.

New Ice Markets

In this matter of ice markets, I feel very frankly that many icemen are almost indifferent to the opportunities offered them. I am speaking in particular of the new ice uses that are being disclosed by research and by the example of other icemen. For instance, we have had facts about the value of hydro-cooling in our possession for quite a while. We know of at least 15 produce items which can be successfully hydro-cooled. These facts are available to every company in the Association. And, through advertising in the best-circulated growers' and shippers' magazines we have uncovered hydro-cooling prospects for you—men who are really interested in field-icing their highly perishable commodities. Yet our impression is that the average iceman has done little in his own community towards securing this additional tonnage.

Tests on Sweet Corn

At the 1950 convention we had a report on the tests in Ohio on ice-packaging sweet corn. More details are available now, and the whole story is favorable to this method. In other words, we have proof positive that sweet corn can reach the market in far superior condition if it is packed in ice during the trip. Publicity to that effect has been carried in several trade journals, due partly to our efforts and partly to those of the paper bag companies. The way is all paved for the sale of hundreds of tons of ice—but the iceman is the individual who must clinch the deal. The final, personal selling job is his responsibility. No ice company in a corn-growing area can afford to overlook this chance for new tonnage.

At the merchandising session last year we had fine discussions on produce icing, poultry icing, vending stations and diversification. The entire session was packed with excellent merchandising ideas. But I wonder how many who attended simply applauded politely and promptly forgot everything they had heard. Too many, I am afraid. Without even giving the ideas serious thought, they said to themselves, "That worked fine for him, but it just isn't applicable to our operation."

My point is, the iceman cannot afford to dismiss any idea for improving his business nowadays. He should keep an open mind, he should use his initiative, he should take every bit of help provided him.

Research

Research is an Association service available to ice companies. Another is the public relations activity conducted on a national scale. We have our national advertising program, our publicity in national magazines, participation in national conventions, and many other efforts. But here again, the main thing is the follow-through of the individual on the local level. He should know the value of making a good impression within his own sales area. He should advertise, using newspaper space, radio and television time, billboards and trucksides. He should publicize himself, too, and the opportunities here are too numerous to mention. Again, there are numerous practical aids available from the national as well as the unit associations. With careful, constant effort, an ice company can put itself in the public eye and stay there—in a favorable light.

More processed ice service, more use of new ice markets, more positive public relations effort, all these, we earnestly hope, will soon mean an upturn in our tonnage. Meanwhile, we must face the fact that our load factor is less than it used to be. The operating load factor of the industry is about 7½ per cent lower than in 1949. Nationally speaking, we are making only about one-third of the ice we are equipped to make. We have a lot of capital tied up in space and machinery which is currently dead weight. We are spending money to maintain equipment not being used.

The only remedy, of course, is more efficient operation. We've got to adopt short cuts, save labor, eliminate waste. Each ice company must become its own efficiency expert—and a rather ruthless one at that. In many cases, outmoded machinery is more of a liability than an asset. Replace it for long-run economy. An expenditure of $400 now may effect a saving of a thousand dollars over a five-year period.

When the subject of labor-saving equipment comes up, it is hard not to mention the ice vending machine. The vendor is good for us, and it is good for our customers. By all means, you should look into the possibilities of this modern service method in your business. If you are in doubt about selecting the best site for a vending station, call on the National Association. The study we made of this problem last year has enabled us to be helpful in many cases.

Preparing Processed Ice

It is no secret in our industry that the present method of preparing processed ice is one of our prime points of waste. Pennies, and even dollars, melt away as we saw or crush and grade a block of ice into processed form. Rest assured that this highly unprofitable factor is also under active scrutiny by the national association. More will be told you later about this, and you will be kept posted as developments occur. I can state, however, that many leading icemen feel that this activity may be one of the most significant we have ever undertaken.

Greater economy of operation is closely linked, in my opinion, with another "must" for ice companies. I refer to the evolution we must make to dollar volume as the basis of our business, rather than ice tonnage. If and when permitted by OPS to make price adjustments, it behooves us to make those adjustments with an eye to a fair profit. In these times of rising operational costs, our thinking must be geared to that fact. If we don't adjust our prices to keep our annual sales on a profitable basis,

then there is little point to staying in business at all.

When tonnage declines and cost of operation remains high, or goes even higher, the price curve simply will have to rise. Surely, we don't like this idea, and a lot of our customers may not care for it, but we do have plenty of company. Almost daily our public relations department receives a notice from some magazine that it has had to raise its advertising rates. Often the subscription or newsstand price has been increased as well. Yet if the magazine is a good one, it suffers no loss in number of advertisers or readers.

These days, people will continue to buy a product for which they feel a need, regardless of its price. Iceman's ice is such a product. This holds true, beyond doubt, for all ice purchased for luxury use. Whether or not it holds true for sales in other categories may be debatable — but either way, most ice companies will soon have no choice about price adjustments if they are to survive in this age of inflation. High tonnage alone, without adequate profit, is not the criterion of a healthy ice business.

The National Association

I couldn't find a better discussional springboard than the high cost of living to plunge me into my main topic, the National Association. For just like the industry itself, the national association is up against increased expenses for which some remedy must be found. Almost every detail of every activity we undertake costs more than it ever did before, while our revenue, based on your annual tonnage, has followed the downward trend. Salaries, the largest single item of expense in a service organization, must be kept at a competitive level, and in Washington that level is high. Office equipment and office maintenance costs are in an upward spiral. Travel expense, fees paid for research, printing and mailing costs, hotel bills, all the thousand and one items we must cover have risen tremendously in the recent past. The end is not in sight, either—there certainly is no lowering of our costs on the horizon.

Therefore, unless the revenue coming in for the support of the national association can be increased, only one conclusion is possible. The services will have to be curtailed in order to live within our income. This is the very practical situation that we face. Personally, I feel rather strongly that every service we now perform is essential to the industry. Certainly research should not be cut back; it is now doing some of its most valuable work in our history. Certainly we cannot spare any of the services our legal department—meaning Mr. Jobe —is currently engaged in. We never needed good public relations for the industry more than we do today. That department too, has put into effect every possible economy. I feel absolutely confident in assuring Association members that they are getting full value for every dollar of their money.

Let's get a bit specific. Without overlapping to any extent the reports of those who will speak later, let me review for you the things that have been achieved by the NAII departments since January 1.

Review of Department

Mr. Jobe's efforts have, in the main, been of a dual nature. First, he has been concerned with obtaining the consideration we felt our industry deserved under wage and price controls. As you know, on January 25 a general wage and price freeze was imposed on business throughout the country. From the very inception of the price freeze, through that period of time when ice was included in the Manufacturer's Regulation CPR-22, the well known "rollback order," Mr. Jobe was actively campaigning to get relief for icemen from it. His World War II experience and contacts were outstandingly valuable in this effort. And, on August 1, his campaign, aided and abetted by the effective work of some industry leaders, bore fruit; OPS issued Supplementary Regulation 45, giving ice companies permission to apply for price adjustments at the local or regional level.

Our legal counsel has secondly been concerned with litigation against the ice industry. It has been threatened on the one hand, by private patent suits dealing with the ice-sizing process. On the other hand, it has been confronted with a multiplicity of problems arising out of legislative enactment and interpretations issued by the federal government. All of these difficulties are vital to icemen everywhere, and they have claimed considerable of Mr. Jobe's time. He has done his usual effective job in handling many of them to a successful conclusion.

Research

Turning to research, may I say that you should feel extremely fortunate in having the services of Mr. Austin. Because of his special experience, we have been able to use him, too, in a double role this year. Mr. Austin held a key position in the department of agriculture during the last war, and is thoroughly familiar with government liaison. He knows where to go and whom to see for necessary information, especially in that department. Since that department has again been designated as claimant agency on materials for the ice industry, Mr. Austin is now serving very usefully as our contact man on materials and equipment. As such, he has done an important job in interpreting materials regulations for icemen this year and in advising them on procurement. This work is sure to become even more important as the race for materials grows tighter.

At the same time, Mr. Austin and his department have kept up an intensive research program. The experiments on corn, meat and poultry icing completed this year, the cooperation with allied industries, and the ion exchange project just inaugurated are among the most practical and productive efforts ever undertaken. The research program proposed for the coming year gives promise of being even more resultful in terms of directly increasing tonnage. My conviction is that our research department has matured and gained experience to such an extent that every activity it goes into is fully worthwhile.

Public Relations

The public relations department's achievements since the first of the year will be chronicled in detail by others. Our advertising and publicity, our cooperation with other industries public-relations-wise, our help to icemen in this field, lead us to believe that our impact on the public nationally is at its highest point in years. The comments received from many of you indicate that you agree. This impact is an intangible thing, but its value to us all is hard to overestimate. To accomplish it has taken a mountain of effort as well as a little good, hard cash. The more important ingredient in building good public relations has been and will continue to be the ability of those who do the building, but money is also a factor. I rate our public relations activity as essential as any other of the association's activities.

Heretofore, as you know, public relations has been supported by a separate fund, subscribed voluntarily by companies willing and able to contribute. This past year subscriptions reached such a low point that it was necessary to appropriate a considerable amount from our surplus fund to meet our obligations. This practice, of course, cannot be continued indefinitely. However, an abbreviated public relations program to be supported out of the surplus funds remaining has been proposed and recommended for 1952.

Personnel Training

This brings me to another related development concerning public relations and another department, one which has been more or less dormant during the past year. I refer to personal training and marketing. As you know, that department has been without a director since the end of 1950, and no new activity has been initiated. This was never meant to be a permanent arrangement; we have always felt there was need for this service to association members. We have also been aware that personnel training and marketing was in

many respects parallel to public relations and that the two even overlapped at frequent points. This situation was often apparent during the years when both departments were completely staffed. As a result, the board of directors at its meeting on Thursday will discuss the formation of a new, combined department which will assume both public relations and marketing — or merchandising—duties. It will be known as the Public Information and Marketing Department.

We believe this can be done economically and with no additions to the present staff, because it is thought that Mr. Timmons and Mr. Pool together can adequately staff the department. They will continue their public relations work and take over merchandising as well, both having had experience in the latter.

I think you will agree that your association is set up to render a comprehensive list of services, all of which are important in varying degrees to each and every member of the industry. It is regrettable, of course, that not every member of the industry feels obligated to support the association and its program of work.

Members Solicit Ice Companies

Our membership represents even a smaller portion than you might think of total national ice production. There are numerous companies, some of them representing sizeable tonnages, which are not in the association. To get some of them in would end our financial troubles for quite a while. I wish I could go out in the field and give our "sales talk" to every non-member company. But I cannot—if this is going to be done at all, it must be done by you. We can mail out floods of postcards, letters, brochures and other literature to these people but the job of contacting them face-to-face, of getting their names on the dotted line, must be the responsibility of someone out in the field. Members should bring in other members. You should think of this as one of your obligations of membership in the association.

You know many of the non-members personally. Talk to them, give them your reasons for belonging. If you need any printed evidence to help you in your contacts, we will be happy to provide it.

This is the main thought I should like to leave with you. If you believe in the ice industry, if you think the national association is important to the industry, if you want to see the national association gain strength and carry on its work, then support it in every way possible to the extent of your ability.

Exhibits at National Ice Convention

AN EDUCATIONAL display of machinery, equipment and supplies for ice manufacturers and distributors was presented as a part of the annual convention of the National Association of Ice Industries at Houston. The list of exhibitors was as follows:

Ballard Sales Co., Fort Worth, Tex.
Bateman Foundry & Machine Co. Inc., Mineral Wells, Tex.
Sam Bonart Uniforms, Inc., New Orleans, La.
F. B. Dickinson & Co., Des Moines, Ia.
Double Seal Ring Co., Fort Worth, Tex.
Frick Company, Inc., Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Hall Machine Shop, New Smyrna Beach, Fla.
Ice Cooling Appliance Corp., Morrison, Ill.
Ice Plant Equipment Co. Inc., Philadelphia, Pa.
Index Coupon and Supply Co., La Porte, Ind.
Knickerbocker Stamping Co., Parkersburg, W. Va.
The Lilly Company, Memphis, Tenn.
Jos. A. Martocello and Co., Philadelphia, Pa.
National Rejectors, Inc., St. Louis, Mo.
Nickerson and Collins Co., Chicago, Ill.
The Ohio Galvanizing and Manufacturing Co., Niles, Ohio
Pittsburgh Waterproof Co., Pittsburgh, Pa.
Progress Refrigerator Co., Louisville, Ky.
Rex Engineering and Sales Co., Oklahoma City, Okla.
Refrigeration, Atlanta, Ga.
Safety Seal Piston Ring Co., Fort Worth, Tex.
Shipper's Equipment Manufacturing Co., Pharr, Tex.
Thermo Cuber Co. Inc., Chicago, Ill.
Union Bag and Paper Corp., New York, N. Y.
Vivian Manufacturing Co., St. Louis, Mo.
York Corporation, York, Pa.

Kingman Ice Plant Closed

THE ice plant at Kingman, Kans., owned by the Western Light and Telephone Co., has been liquidated and for the first time in 44 years the town is without an ice plant. Arrangements probably will be made for an ice dealer to be supplied from the ice plant at Pratt. The building has been sold and machinery and equipment will be moved out.

The original plant was built in 1907 by local boosters including J. E. Ferguson, W. S. Grosnevor, P. S. Woods, P. H. Parmenter, G. M. Frisbie and others. Later this business was expanded to include an ice cream factory, creamery and grain elevator. At one time the plant had a summer payroll of twenty men. The ice plant was sold to the utility firm years ago.

Census Bureau Reports on Household Refrigeration

A PRELIMINARY report on household refrigeration as shown by the 1950 Census has been issued by the Bureau of Census, U. S. Dept. of Commerce. The report shows that the number of occupied dwelling units having mechanical refrigeration more than doubled during the past ten years and the number with ice refrigeration was reduced to only half as many as in 1940. In 1950, about 33.5 million occupied dwelling units, or about eight of ten reported mechanical refrigeration, and one of ten reported ice refrigeration. The highest proportion of units not having any refrigeration was among rural farm units, of which 22 percent lacked refrigeration. In contrast the proportion lacking refrigeration in urban areas was only four percent.

Fire Destroys Large Ice Plant $75,000 Damage

A DISASTROUS $75,000 fire levelled eight buildings of the Eddy Ice Company plant, Rutland, Vt. The fire destroyed four old ice houses, two storage houses and barn and a refrigerator storehouse. The manufactured ice plant, where most of the plant's operations were carried on, came through undamaged.

Two of the buildings were recently remodeled into cold storage plant and equipped with new machinery valued at approximately $23,000, according to Edward M. Copps, president-manager of the company. Mr. Copps said the plant was only partially insured. Lost in the main buildings were two compressors, a large pump and 22 refrigerators. A large supply of white oak lumber and insulation stored in the barn burned quickly.

New Ice Company To Serve Albert Lea

THE Artificial Ice Co., has been organized at Albert Lea, Minn. The new company was formed and took over distribution of ice to this southern Minnesota community of 18,000 when the Albert Lea Ice and Fuel Company discontinued distribution. Their cessation of activity was the marking of the end of almost one hundred years of natural ice harvesting and distribution. The present company is operated by Hugh Wolgamot, formerly sales representative for Refrigeration Engineering Company, manufacturers of the Polar vendor. The newly formed company is not engaged in manufacture of ice but is buying from a Rochester ice plant.

CONSUMERS BUY ICED SWEET CORN

Experimental study on icing of sweet corn in the field and at the market results in specific and detailed figures on consumer acceptance, increased sales, and better prices.

IN RECENT years, growers have made improvements in methods of marketing fresh sweet corn in the commercial growing and shipping areas of the East, South and West. If midwestern truck farmers are to hold their share of this market, they must improve their methods of marketing. Sweet corn must be harvested in the milk stage with 4 to 6 percent sugars, be free from insect damage, be uniformly trimmed, and have a dark green color. In addition to this, sweet corn must be properly refrigerated from the field to the consumer to assure and maintain this quality.

In 1949, sweet corn was pre-cooled and packed in ice for delivery to the Indianapolis area. This method of marketing was accepted by growers, handlers and consumers. This makes it obvious that an accurate evaluation of the program is needed for the information of midwest growers.

The general method employed was the distribution of questionnaire post cards. This was personally supervised at each point of issuance and the research was explained to each individual purchaser as often as possible. This was to help them give clearer, more accurate answers to the questions on the post cards.

A sample of the questionnaire is given below.

Cards were coded for identification purposes and a record was kept for each store as to the grower, variety, cards issued, amount sold, and price. Also a record was taken of each store's sweet corn sales for the two weeks previous to the time the cards were distributed. In addition to this, an information sheet was given to all purchasers instructing them in the proper home care of the corn, emphasizing the importance of keeping the corn at a low temperature until used.

This investigation of what consumers think of high quality sweet corn has definitely proved the value of using ice for sweet corn which is to be consumed locally. Economical methods of icing have been developed. A new and revolutionary procedure of packaging the corn and the ice in wet strength paper bags has been discovered. These projects have stimulated the interest of growers, extension people, wholesalers, retailers and consumers. This study was jointly sponsored by the Indiana Association of Ice Industries and the National Association of Ice Industries. The work was conducted at Purdue University. As a result of these and other projects, consumers are buying more corn at higher prices and eating more corn with greater enjoyment than ever before.

The corn was advertised and clearly marked at the store as "Field Iced Sweet Corn" and was top dressed with ice when on display. These methods of advertising created some curiosity on the part of shoppers and made possible the explanation of the project to many persons who would have otherwise paid but little attention to this method by which the product was being handled.

The project was run from Thursday, July 27, to Friday, August 4, in four Kroger Stores in Evansville; on Friday and Saturday, August 11 and 12, in a Kroger store in Terre Haute; and on three consecutive week ends (August 18 and 19, August 25 and 26, and September 1 and 2) in a Kroger Store in Indianapolis.

Results obtained from these cards are shown in Table I.

An interesting note on the information in Table I is that 50 percent of the cards marked "Same" were sent in by persons who had made a second purchase of this corn and were comparing that purchase with the first. These cards, along with the "not marked" cards that indicated a preference for this corn, make a total of 97.3 percent who considered this corn as better in quality than that which is handled in the usual way. This proves that it is possible to improve the market quality of Midwest sweet corn and that it should be done.

Favorable Comments

The following favorable comments are typical of those received on the majority of the cards:

"This corn is far sweeter and has much more flavor. It is the very best sweet corn I have ever purchased."

"Flavor very good — also tender corn. Much better than the same type of ears purchased from a farmer this week."

"The best ever. Just couldn't be a better flavor."

"Tender and delicious!"

"Wonderful—just like it was just picked."

"Good flavor and quality. It is definitely a forward step in marketing corn."

"Just like the corn my mother used to cook when we lived on the farm."

"Best tasting corn I ever ate. Where can I get some more?"

The only two unfavorable comments on the quality of the corn were as follows:

"Very tender, but not sweet enough."

"This corn was good — a little young and I believe could be sweeter in comparison with some other corn purchased this year. However, it is very good."

The sale of this corn and the beginning of the survey were launched

This survey is being made as a part of an effort to bring better sweet corn to your table. Please answer the following questions and drop this card into a mail box.

Quantity purchased: ..... dozen ears
Have you purchased sweet corn within the last week?
YES ..... NO .....
If so, where? .....
In your opinion how does this corn compare to your previous purchase? BETTER ..... SAME.....
POORER .....
Comments on quality and flavor:

TABLE I. SUMMARY OF INFORMATION EXTRACTED FROM QUESTIONNAIRE CARDS

Place of Distribution	Distribution and Return of Cards: Cards Distributed	Cards Returned	Per Cent Returned	Opinion of the Corn Based on the "Better," "Same" or "Poor" Question: Per Cent Marked Better	Per Cent Marked Same	Per Cent Marked Poorer	Per Cent Not Marked
Evansville							
Store No. 1	165	14	8.5	85.8	7.1	0.0	7.1
No. 2	402	77	19.2	84.4	2.6	0.0	13.0*
No. 3	294	88	29.9	86.4	10.2	0.0	3.4*
No. 4	237	48	20.2	93.7	4.2	0.0	2.1*
Totals for Evansville	1098	277	20.6	87.2	5.7	0.0	7.1
Terre Haute	211	54	25.6	100.0	0.0	0.0	0.0
Indianapolis	604	44	7.3	88.7	4.5	0.0	6.8*
Totals for all stores	1913	325	17.0	89.6	4.9	0.0	5.5

* These cards, though not marked "Better," "Same," or "Poorer," indicated by the comments that the corn was superior in quality to previous purchase.

simultaneously at Evansville. A return trip was made late in August to determine whether or not the increase in sales that occurred during the eight day survey period had continued after the special advertising and displays had been discontinued. Corn sales for the three weeks following the survey period were 22 percent higher than during the two previous weeks* even though "home grown" sweet corn was still abundant at nearby farms and open markets.

Methods of Handling

The sweet corn upon which this survey was based was handled by two different methods. The corn that was supplied to the Evansville stores was harvested in the afternoon and immediately put into mesh bags and blanketed with crushed ice at the rate of 3 to 4 pounds per dozen ears. This corn was then delivered directly to the retail stores the following morning. The corn for the Indianapolis and Terre Haute stores was harvested in the morning and immediately precooled in an ice-water bath for 20 minutes, packed in crates, and top dressed with ice at the rate of 3 to 4 pounds per dozen ears. This corn was distributed to warehouses in the afternoon, held in cold storage overnight, and delivered to the retail stores the following morning.

The second method is the better of the two. Although it requires more time to move the corn to the retail stores it has two advantages. The first is that the corn has a higher sugar content when picked in the morning and the second is that by pre-cooling the corn, its temperature is lowered in less time than is possible by using ice alone. Pre-cooling is important because the sooner the metabolism rate can be substantialy decreased the less will be the loss of sugar in the ear.

* Records for Evansville Store No. 2 were not available; therefore, data from this store was not included in this computation.

The producers followed ear worm and corn borer control practices with the result that their corn was 85 to 90 percent worm free. These producers consistently received a bonus over market prices for their worm free, field iced corn. This was more than enough to cover the extra costs of icing and insect control.

TABLE II. SUGAR LOSS CALCULATED ON SUGAR AT START

Number of Hours in Storage	TOTAL SUGARS Storage Temperature 32 F	50 F.	68 F.	86 F.	104 F.
24	8.12%	16.98%	25.61%	50.28%	45.79%
48	14.51	27.95	45.73	57.09	60.15
72	18.03	38.71	55.50	59.00	62.16
96	22.00	49.22	62.10	61.84	——

Certain correlations between the information obtained from this project and information from analytical data indicates that the flavor of sweet corn is related to the amount of sugars present in the kernel. The information in Table II on storage temperatures as related to sugar losses was compiled by Appleman and Arthur.

Sugar Losses

From Table II, corn stored at 86 F. loses half of its sugar in the first 24 hours, and corn stored at 68 F. loses one-fourth of its sugars the first 24 hours and has lost approximately half of its sugars at the end of 48 hours. At prime, sweet corn averages only about 6 percent sugars when harvested; therefore, these are obviously drastic losses.

The sugar losses at high temperatures do not continue to increase rapidly after 50 percent of the sugars are lost because losses cease when the total sugars in the ear are reduced to 1.8 percent.[1] As properly iced corn is held near 32 F., it loses very little sugar before it is marketed. The fact that iced corn is higher in sugar content and better in flavor than corn handled in the usual way (at temperatures above 68 F.) would indicate that the flavor is closely related to the sugar content.

It has also been proved that sweet corn loses as much flavor in one day when stored at 80 F. as it does in a week when stored under ice at 35 F°. When stored under ice, the moisture content of the corn is also maintained.[2] This preserves the eye appealing, fresh green color of the corn.

Conclusions

To maintain quality and consumer acceptance, fresh sweet corn must be held under cool and moist conditions. For this reason, the field icing process is a superior method of handling. The extra costs of icing will be compensated for by increased prices and increased consumption, because the homemaker is willing to pay a few cents more for this corn and will even increase her purchases despite higher prices.

The Midwest truck farmers should adopt new methods of handling their fresh sweet corn for they are facing serious competition from growers in other regions who ship into midwest markets under snow ice. Since the field icing program has neither a high initial cost nor a high operating cost, it is a practical method of improving the quality of the midwest's fresh market sweet corn.

[1] "Carbohydrate Metabolism in Green Corn During Storage at Different Temperatures." C. O. Appleman and J. M. Arthur, Jour. Agr. Res., 17: 137-15. Jy 15, 1919.

[2] "Factors Affecting the Objective and Organoleptic Evaluation of Quality in Sweet corn." Amihud Kramer, R. H. Guyer, and L. E. Ide, Amer. Soc. Hort. Sci., Proc., 54: 342-356, 1949.

Canadian Co. Observes Opening of New Plant

THE Lake Simcoe Ice & Fuel Ltd., Ontario, Canada opened a new one-man ice plant at Leaside last year, as described and illustrated in the May, 1951 ICE AND REFRIGERATION. Recently in the Leaside Press the company used a large display advertisement to commemorate its first anniversary. Pictures of the plant were reproduced showing the modernized process of making ice.

ICE Helps Speed Fresh Dressed Chickens From Grower to City Consumer

Worker in chicken processing plant at Jasper, Ind., packs birds on bed of ice (to be covered with more ice) to preserve their flavor on journey to Chicago.

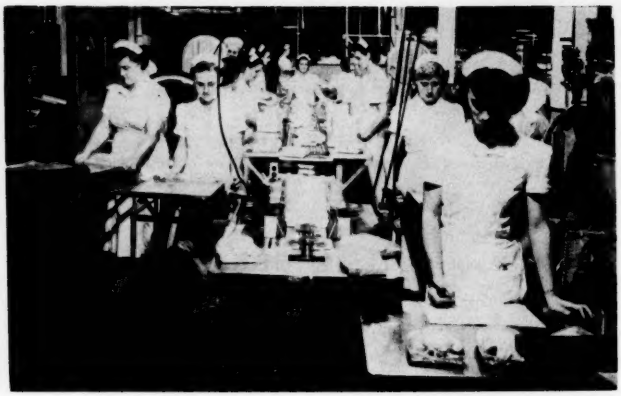
AN EXHIBIT at the annual Home Show held at Jasper, Ind. depicted the modern method of marketing freshly dressed chickens with ice. The display resulted from a cooperative undertaking by Swift and Company and the Jasper Ice Company. The exhibit, illustrated below was of attractively dressed chickens imbedded in crushed ice.

New Broiler Plant

Swift & Company recently completed a new broiler processing plant in Jasper, with processing capacity of up to 20,000 birds per day. The ice for chilling and packing the dressed birds is supplied by the Jasper Ice Co., which recently installed special equipment for preparing crushed ice for that purpose.

This new method of preparing dressed chickens for the market appeals to city consumers, as is shown by an illustrated feature article by Rosemary Fox in the Chicago Tribune which hailed chicken processing as big business and described the dressed birds as clean and healthy and tasty.

This display of dressed chickens imbedded in crushed ice was shown at the Jasper, Ind. Home Show, as a joint undertaking of Swift & Co. and the Jasper Ice Co.



Workers packaging chickens, each of which has been cut into 11 pieces, for shipment to self-service markets.

Chicken Processing Is Big Business

Illustrated with pictures, the article says that gone are the days when chickens were raised mainly for their eggs, so that city dwellers had fresh chicken only about four months out of the year and the rest of the time ate frozen stored birds occasionally. Chicken processing is big business today, and the year-around supplies we now get are young birds raised just for eating—whether they be broilers, fryers or roasters. It takes only twelve hours by refrigerated trucks to transport scientifically bred and fed, tender meaty chickens from the new poultry plant of Swift & Co. at Jasper, Ind. to Chicago's retail markets.

On a recent tour of this eight months' old plant, the writer saw hundreds of plump white rock chickens, which had been on a special final ration of feed for 24 to 36 hours, go down an assembly line process of drawing, de-feathering, and cleaning by skilled workers using the most scientific and sanitary methods. You know these birds are clean and healthy by their appearance and by the little handling and quick chilling they get in ice to reduce body temperature to 38 degrees. As a final step, experts inspect the birds to grade them A, B or C. Only the finest grade A chickens receive a brand identification for city markets.

The ice chilling method used in this modern plant takes only about two hours, as compared with the 16 to 18 hours for the conventional dry cold method. The new method makes it possible for consumers to buy strictly fresh chickens the day after they are processed. Even the shipping process is specially designed to insure ice cold fresh chickens in stores. The cleaned birds are packed, tagged, placed on a layer of ice, and covered with more ice. Then they are loaded into a refrigerated truck, where the boxes are sprayed with a blanket of snow further to preserve the fowl.

Business Magazine Says Ice Is Here to Stay

HOW the ice industry met the threat of mechanical competition which became a major development in the middle 1920's is told in a feature article in the September issue of American Business. The article, written by John G. Pool Jr. of the National Ice Association publicity staff, enumerates the various steps of the merchandising program devised by the ice industry.

These steps included introduction of modern ice refrigerators, new sales techniques, uniformed and trained service men, and national ice advertising. Under this program, in spite of mechanical inroads by 1930, ice sales had reached an all time peak of 56 million tons annually.

Through the depression and later years, the article points out, this work has continued, with the addition of technical research, through which new uses for ice have been uncovered, improvement of distribution methods, and building demand for crushed ice and cubes. Mr. Pool concludes that in 1951, 26 years after its predicted demise, the ice industry is still alive and is furnishing such service that it is very much here to stay for many years.

Ice Refrigerator Salesman Brings Home the Bacon

OPERATING as special assistant to the general manager for the Florida Division of The City Products Corp., Miami, Fla., John Causey recently sold 1150 ice refrigerators within one month. Here's an example of how he goes about selling ice refrigerators.

Before submitting a bid on 1150 refrigerators for the Pahokee and Belle Glade, Florida Housing Authority, Mr. Causey gave a lot of time toward making the contact that was necessary to get in on the ground floor. It was then up to him to decide on a price he could make that would prove attractive, all of which took courage and a determination to get the order.

On September 6, accompanied by George V. Warren, he went to Pahokee, Fla., where the bids were to be opened. Eight other bids were opened and you may be sure, while their contents were noted and considered by the board, Causey and Warren prayed that John's bid would be the lowest or, at least within an acceptable price.

It was—and with his usual smoothness John Causey (who is no beginner in this game, having become affiliated with City Ice & Fuel when they took over other properties in Florida in 1930, demonstrated that ice refrigerators are still in demand and can be sold.

Ice Season Opens In Australia

THE Canadian Association of Ice Industries bulletin has a report from J. A. Boell Jr. of the Australia Ice Association, as follows:

"Our weather is still following its most unusual course. We missed autumn altogether and went straight from hot summer weather into cold winter weather. We now appear to be experiencing somewhat the same pattern in reverse, as after the coldest and wettest winter for over 50 years, the weather changed almost overnight at the end of August and this month (September) we have been having near summer weather. Like autumn, the weather usually associated with spring seems to be completely missing.

"Apart from the early winter months, business has been good and sales have been from 10 to 15 percent better than the previous year. Since last summer was a record, as far as heat was concerned, we will find it hard to improve on those sales."

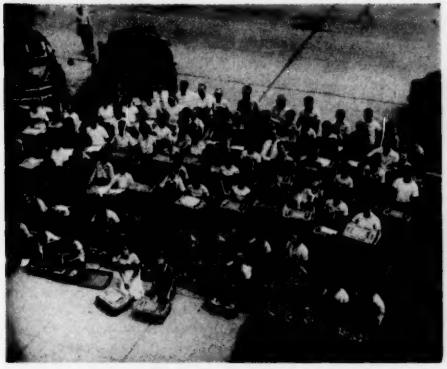
Chamber of Commerce Promotes Broiler Packing Industry—And Poultry Icing

THE rapidly expanding broiler industry was promoted in Greencastle, Ind. recently with a broiler show, staged as a part of the annual Putnam County Fall Festival. The program was initiated by the Greencastle Chamber of Commerce and the Putnam County Extension office, a cooperative arrangement between the merchants and the farmers in that area.

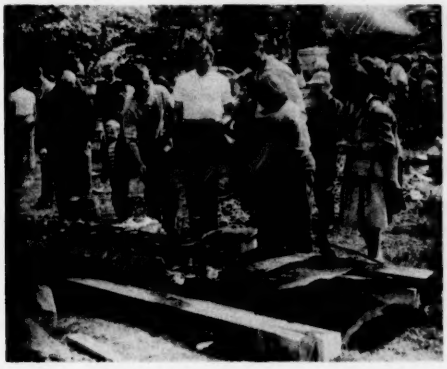
Judging dressed and live chickens entered by 4-H Club members at annual Putnam County Fall Festival.

Farming Area Produces Broilers

Greencastle is the county seat of Putnam County, which is largely a farming area and perfectly suited to broiler production. It is near a large metropolitan center (Indianapolis) which offers a ready market for farm grown broilers. Large scale broiler production in such a locality would be most attractive to the larger poultry producers, as well as farmers who could profitably produce them on a smaller scale.



Some of the 82 4-H Club boys and girls receive baby chicks to enter in broiler show.



Getting ready for barbecue picnic in Greencastle city park following the Fall Festival.

The ice industry has a big business interest in such promotional work because broilers, after being processed require refrigeration, and that means sales of more ice.

4-H Club girls and boys were provided chicks of the "Bird of Tomorrow" variety by local merchants, and their production was supervised by the local County Agent. Approximately 5,000 chickens were distributed equally among 85 children and were raised over an 11-week period. The maturity date of the broilers was planned to coincide with the annual Putnam County Fall Festival, where these birds competed in a broiler show. Each competing 4-H Club member entered four chickens in the show, two dressed and two on foot and prizes were awarded for the best mature birds. These birds were displayed in pens and in ice display cases throughout the Fall Festival and were the feature exhibit of that event.

Sunday Picnic

On Sunday following the festival, the 4-H Clubbers and their families, together with the merchants sponsors were invited to the Greencastle City Park where all the exhibited chickens were barbecued for a Sunday picnic.

Ice Man Heads Local Chamber of Commerce

A RESIDENT of Sedalia for several years, Jack M. Cunningham, owner of the Sedalia, Mo., Ice and Cold Storage Company was elected president of the Sedalia Chamber of Commerce. Mr. Cunningham came to Sedalia from Carthage, Mo.

Ice Chunk Snarls Traffic

A LARGE elusive block of ice, which apparently had slid off a truck, snarled traffic on State Highway Route 25 at Elizabeth, N. J. Passing autos buffeted the ice about the circle and sent it crashing into other cars. A radio patrol crew finally ended the hazard by chopping it up.

Reports from Unit Ice Associations

Unit Ice Association Secretaries Report Progress at Annual Meeting

THE annual fall meeting of the Unit Secretaries was held in connection with the annual ice convention at the Shamrock Hotel, Houston, Texas, November 13-16. The usual forenoon session was held on the opening day of the convention and a second session Thursday afternoon. The informal program covered extemporaneous reports from representatives of the National Association of Ice Industries and from the secretaries on conditions in their sections and the activities of their associations. Miss Muriel Washburn, secretary of the Florida Association and president of the group presided.

Miss Washburn was reelected chairman and Mrs. Edna Vaughan of the Delta States Ice Association, reelected secretary-treasurer of the group for the coming year.

The secretaries were welcomed to Texas and the convention by Gen. P. A. Weatherred, secretary-counsel of the Southwestern Association of Ice Industries. The General complimented the group on the splendid turnout and promised them that the convention program would be up to its usual high standard.

Mrs. Vaughan reporting on finances said all bills were paid and a sufficient balance remained to take care of all current obligations.

Reports From National

Reporting for the Research and Engineering Department, C. P. Austin called attention to and discussed briefly the government program on materials and equipment. Among the accomplishments of the past year, he said, was the continuance and expansion of poultry icing and fresh meat icing, details of which were to be reported more fully at one of the convention sessions. One of the newer projects was a study of Ion exchange being conducted at the University of California. He also briefly outlined the program for next year, all of which he explained would be discussed more fully at one of the convention sessions.

Francis X. Timmons, publicity director, gave a report on National advertising and publicity. This program for 1951 he said had provided the greatest coverage from the standpoint of circulation than any previous campaign. Ice advertisements had reached a total circulation estimated at 145,456,644 readers. The theme of these had been pointed toward additional sales of processed ice. Trade paper advertising consisted of 111 advertisements in 28 publications with a circulation of 234,978 readers. Important publicity had been promulgated by the National Tea Council through its advertising of iced tea on which it had spent about two million dollars. Exhibits at conventions of grocers, home economists, vegetable growers and others had resulted in 184,000 requests for additional information on the use of ice. Much additional publicity had been created through magazine articles, feature stories in newspapers, television and radio programs. Merchandising aids to groups and individual ice men had been provided by furnishing the film "Naturally Yours" and furnishing prepared speeches for local meetings.

Wm. T. Jobe, general counsel, reported that the general confusion in Washington continues. Some efforts had been made toward getting a relaxation of the price control provision but this had been only partially successful. It is even more difficult now than formerly to obtain relaxation of controls and the future does not hold much promise in a change of attitude in this respect. The latest bit of good news was the issuance (as announced in the November ICE AND REFRIGERATION) of Amendment 1 to Supplementary Regulations 45, effective September 24 which provides that ice companies which customarily charge lower prices in winter may, subject to certain requirements, return to their regular summer schedules in the spring.

Secretaries Report Local Activities

An interesting phase of the meeting were informal reports by the secretaries on the activities and problems of their associations.

Ray T. Wilber of New England asserted that members of the ice industry in general need to be more keenly aware of the value of merchandising and marketing. Far too many of them he said, are still afflicted with inertia and an unwillingness to try to expand their business. In his section ice exhibits at meetings such as rotary clubs and advertising clubs had resulted not only in good publicity at the meetings, but they had also inspired newspaper feature stories.

Lewis H. Powell, North Carolina Ice Association reported a survey among the members of his association on revenue compared to costs. The returns are not yet in but indications are that it will be fairly complete and they expect it to furnish some practical information.

P. A. Weatherred, Southwestern Ice Manufacturers Association reported that in Texas, average tonnage had been up, although some areas had been affected by rural electrification. Ice making machines in the cities were making tough competition. Vendors are increasing and they sell a considerable volume of ice. Chief association work had been holding an engineering conference and a merchandising school. The new uses for ice being developed by the National Association he said, offers a big opportunity for secretaries to extend this knowledge among their members.

V. A. Esphorst, Missouri Valley Association, reported that their most recent work had been cooperating with the National Poultry and Egg Board and the University of Missouri in demonstrating the use of ice with poultry. Ice men are asked to cooperate by furnishing ice. Tonnage in Missouri was about the same as last year. It was slightly less in the larger cities but the small towns and rural areas showed a slight increase.

Miss Elizabeth Shannon, Ohio Association of Ice Industries said their outstanding activity had been cooperating with the corn icing program conducted as a joint effort of Ohio State University, the Ohio Association and the National Association. Results of a late survey, she said, showed conclusively that customers like iced sweet corn and will pay more for it.

Mrs. Mildred Croft, Canadian Association, commented on the Canadian ice advertising program which had been very successful.

Robert Walton, Indiana Association, reported that their experimental and demonstration work on vegetable icing and poultry icing had been very successful. Sales in the larger cities were up about 10 percent, but down about 12 percent in rural areas. He suggested that the secretaries work out a plan to pool the information on such work and make it available to all of them. In the ensuing discussion this idea was heartily approved, and the chairman appointed Mr. Walton

chairman of a committee to formulate a plan for that purpose.

Miss Muriel Washburn, Florida association, reported that she had found a monthly bulletin to be a valuable aid in keeping the members informed on the work of the association. A valuable piece of missionary work, she suggested, would be to emphasize the necessity of cleaning up platforms where customers call for ice.

Samuel Freer, Eastern States Association, reported that unfavorable weather and competition from ice making machines had reduced the tonnage in that area about 9 percent over last year. One of their activities was to cooperate in a display of iced poultry and this had created much interest.

Canadian Association of Ice Industries

THE annual convention of the Canadian Association of Ice Industries was held November 22-24 at the Royal York Hotel, Toronto. A report of this meeting will be published in the January ICE AND REFRIGERATION.

We will be doing some additional advertising in some of the leading newspapers in Canada prior to the Christmas season to develop the use of party Ice. The members of the Association who are in the cities where these newspapers are published, are permitted to tie in an ad of their own with the Association ad. This has been the first year daily newspapers have been used for national advertising in Canada. Seventy-five percent of the advertising proportion has been devoted to newspaper advertising and 25 percent to magazine advertising. By doing this the members who contribute to the Association advertising fund receive benefit in their own particular locality from Association advertising.

As far as fall tonnage is concerned, September and October were extremely good but with the coming of November, tonnage has dropped somewhat with the advent of early cold weather. There does not seem to be any in between season—we just went from warm into cold weather.

Missouri Valley Ice Manufacturers' Association

THE annual convention of the Missouri Valley Ice Manufacturers Association will be held at the Hotel President, Kansas City, Mo., January 7-9, 1952. An outstanding business and social program is being arranged according to an announcement from the association office.

Indiana Association Of Ice Industries

ROBERT W. WALTON, Secy.

WITH the appearance of fall weather, more attention should be given to merchandising by all ice companies. Many opportunities exist to improve the "off season" load factor by promoting more extensive use of ice in commercial establishments—a large potential still remains in the vegetable icing field—and more and more grocers are recognizing the profitability of icing poultry and fish. Also, the holiday season offers a splendid opportunity to take advantage of the party ice business.

The association is still in a position to assist members in promoting ice sales in their localities. Help is available in arranging and conducting sales promotion meetings for consumer groups. These meetings have been highly productive in many Indiana towns.

The Poultry and Egg National Board Merchandising School has completed its stand in Indianapolis. The school was conducted by Harold Rotzel, Field Instructor for the Board. Mr. Rotzel did an excellent job of instructing local merchants in the latest methods of merchandising poultry and eggs, and as a result we should see more progressive merchandising in the Indianapolis area. Mr. Rotzel's slogan is "Ice is the symbol of freshness" and brings forcefully home the value of ice in handling fresh poultry.

The Poultry and Egg National Board plans to conduct these merchandising schools over a four year period, and will go into all major marketing areas with the program. These schools are of tremendous value to the ice business, for they provide the merchant with an unbiased recommendation on the application of ice in the poultry industry. It is expected that they will be brought to other Indiana cities in the near future.

The association still provides a Public Relations Service to its members. Available is the film "Naturally Yours" which will gladly be presented to Civic Clubs, Schools or other community organizations.

Walton Talks to Rotary

A TALK on the ice industry, supplemented with the movie film "Naturally Yours," was presented by Robert Walton, secretary of the Indiana Association of Ice Industries at a Rotary Club meeting at Columbus, Ind.

The Ice Industry

California Association Of Ice Industries

J. L. DAWSON, Executive Manager

THE California Association of Ice Industries has always held its annual convention in the spring with the exception of the past two years when it was held in December. While these December conventions have proved successful, it has been decided to return to a spring convention because it is felt that enthusiasm engendered at a convention immediately preceding the ice season will be reflected in our business to a greater degree than when carried over from a convention held in the fall or early winter. No specific dates have yet been decided upon but it is anticipated that the convention will be held some time in March or April.

Our tonnage figures in California for 1951 will be lower than they were in 1950. This apparently follows the national pattern. One factor, however, in California which may or may not follow the national trend is in our net operating revenue. In spite of lower tonnages in 1951 the net operating revenues will, generally speaking, be higher than they were in 1950. This is attributable primarily to operating economies and reduction of plant facilities more in keeping with the tonnage requirements for this year's business. We have now geared our operations to better cope with fluctuations in ice tonnage requirements and it is felt that our industry as a whole is in an excellent position to meet the demands of the coming season. Another factor which has improved the revenue position of some of our members has been the adoption of more economical distribution methods.

Georgia Ice Manufacturers Association

RICHARD W. FLORRID, Secretary

THE annual convention of the Georgia Ice Manufacturers Association and the Southern Ice Exchange will be held at the Ansley Hotel, Atlanta, Ga. February 19 and 20, 1952. An interesting program of business sessions and entertainment has been planned.

At a meeting of the Board of Directors recently, plans were made to hold an engineers short course at Georgia Tech for two days early in January. Arrangements have been made for rooms in the men's residence hall.

The Ice Industry

City Products Report

THE nine month statement of City Products Corp. was released by William J. Sinek, president, October 30. The report shows net revenue from sales of $60,285,899 as compared with $55,227,088 for the same period in 1950.

Net earnings of the corporation for the nine months period, after providing for higher income taxes imposed retroactively by the Revenue Act of 1951, were $3,217,757 or $2.56 per share as compared with $3.816,472 or $3.04 per share in the same period last year.

Mr. Sinek, in releasing these figures, stated City Products Corporation has during the past year added another department to its already diversified activities. It is known as the "Division of Natural Resources" and was created to acquire interests in oil, gas and other natural resources. Investments to date in producing wells in Texas have been moderate and the company also has moderate drilling interests in Oklahoma. These ventures are proving profitable and further investments are contemplated to successfully employ the company's strong cash position.

For the past several years the management has had a well planned program of diversified expansion and in addition to the above, is presently giving consideration to a number of promising dairy projects.

American Service Company Reports Larger Income

THE American Service Company, ice manufacturers and cold storage operators, Kansas City, Mo., had a larger net income in the nine months ended September 30 than in the same period a year earlier.

Net income for the 9-month period was $253,920, equal after dividend requirements on the preferred and class A stocks, to $1.18 a share on the outstanding 91,556 shares of common. This compared with net of $100,778 a year earlier, which amount was not sufficient to cover the dividends on the two senior classes of stock.

Ice sales were $2,065,632, compared with $2,008,809. Sales of other merchandise totaled $1,862,099, against $1,724,753. Operating expenses of $956,124 compared with $974,903 a year previous.

Net working capital September 30 amounted to $1,513,239 against $1,180,148 a year earlier.

Explosion Damages Puyallup Ice Plant

A TERRIFIC explosion at the Puyallup Ice Co. plant at Puyallup, Wash. last October blew out a receiver tank full of ammonia under high pressure. Temporary repairs were made for early resumption of ice manufacturing, and refrigeration was resumed on Sunday to keep the frozen food locker plant in operation.

Visual aspects of the aftermath of the explosion caused considerable excitement and consternation in the peaceful fruit-laden Puyallup Valley of Western Washington, of which Puyallup is chief community. Fire apparatus and fire department personnel were dispatched immediately to check possible conflagration and confirm the report of the fire, but the ammonia fumes were so strong in the plant that two stalwart members of the fire force suffered burns. Mr. Heath pointed out that the explosion must have been due to worn out equipment, with pressure having failed to rise high enough to operate the safety valves.

Force of the explosion was so great that the steel tank was straightened out, the concrete floor blown down about four inches, and six inches of roof opened up for a distance of 30 feet. The skylights were blown out and four inch channel irons were twisted like pretzels, one being driven through the wall.

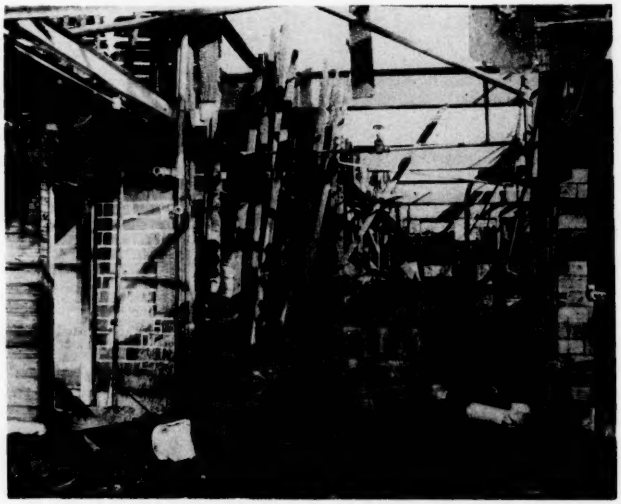
Poultry Merchandising Schools in Missouri

THE Extension Service of the University of Missouri will conduct poultry merchandising schools in various communities of the state starting after the first of the year. These classes will be conducted along the same lines as those held by the Poultry and Egg National Board in St. Louis and Kansas City, during the early part of this year. Ice will have an important part in these demonstrations.

Fire Destroys Ice Plant $75,000 Damage

FIRE swept through the Walton Ice & Fuel plant at Elyria, Ohio, October 14, causing serious injury to one man and loss estimated at $75,000. The cause was not determined. Harvey Leimbach, an employee of the company, was trapped by flames in his living quarters on the second floor and his leap resulted in a serious back injury.

The ice manufacturing and storage plant was demolished. Firemen fought the wind-whipped blaze for several hours. The 75x125 tile and steel building has been used by the company for the manufacture and storage of ice for the last 12 years. Also destroyed was considerable ice making machinery, motors and other equipment.



View of fire damage to Walton Ice Company plant showing debris littered floor, heat twisted steel windows, and entirely consumed equipment and roof. The plant was a total loss.

Frozen Foods

*Reg. U. S. Pat. Off.

PREPARATION PACKAGING FREEZING STORAGE DISTRIBUTION DESIGN CONSTRUCTION EQUIPMENT

Research Committee Reviews Frozen Food Standards

THE Research and Standards Committee of the National Association of Frozen Food Packers held a series of daily meetings in Washington, D. C., and College Park, Md., during the week of October 22-26, according to an announcement by L. S. Martin, Secretary-Manager of N.A.F.F.P. Dr. K. G. Dykstra, Committee Chairman, explained that a considerable portion of the meetings was devoted to a review of the data accumulated by the National Association in connection with its mandatory standard research program. He indicated that the Committee made substantial progress in formulating the industry's position on specific problems expected to arise when the Food and Drug Administration conducts formal hearings on standards for frozen asparagus and frozen peas.

The week's activities opened at the University of Maryland with the Committee taste-testing 354 special samples of asparagus and peas. This completed an important phase in the development of the industry's position on the location of the standard-substandard level for maturity of asparagus and of peas.

At a meeting with representatives of the Food and Drug Administration, the Committee learned that the vegetable hearings are not likely to be scheduled before 1953 and that the Administration hopes to complete work on the Frozen Fruit Standards within the next twelve months.

The Committee sat down with officials of the Production and Marketing Administration, U. S. Department of Agriculture, to consider proposals on grades covering frozen lima beans, frozen leafy greens, frozen mixed vegetables, and frozen asparagus. Objective tests, designed to measure the tenderness and maturity of frozen lima beans, were studied in connection with a research project of U.S.D.A. The status of visual grading aids for use in connection with grades of frozen lima beans and frozen asparagus was reviewed.

The Committee also met with representatives of the Western Regional Research Laboratory from Albany, Calif., to discuss problems and procedures relating to the research project, "Temperature Requirements in the Commercial Transportation and Warehousing of Frozen Foods." This program, which is under way at the Western Regional Research Laboratory contemplates a series of tests to determine how the quality of frozen foods is affected by temperature fluctuations during the course of distribution from packer to consumer.

1951 Pack of Frozen Strawberries Decreases

THE 1951 pack of frozen strawberries, exclusive of California, amounted to 109,039,913, pounds, according to a preliminary tabulation by the National Association of Frozen Food Packers. This total was approximately 30 percent smaller than the record high production in 1950.

Pack totals for 1951 were sharply reduced from last year in all regions. Data for California production in 1951 are not available, and thus are not included in the Association's preliminary pack report.

While pack reductions in all major container-size classifications were indicated for 1951, the pack in retail sizes declined less than the pack in barrels and other large containers. The retail pack was about 44 percent of the total this year, as compared to approximately 38 percent of total production in 1950.

The use of the 12 oz. size continued to grow in importance as compared to the 16 oz. size. In fact, the 12 oz. retail pack in 1951 was almost twice as great as the volume packed in the 16 oz. size.

Frozen Cherry Pack Continues Gain

THE 1951 pack of Frozen R.S.P. Cherries was 99,017,977 pounds, according to a preliminary tabulation of the National Association of Frozen Food Packers. This total is greater than the pack in any preceding year except 1950, and is only about five percent smaller than the 1950 record high pack of 104,458,625 pounds.

On a regional basis, a significant reduction in pack is indicated for the Midwest, but most of this reduction was offset by increased production in other regions.

Government Inspection of Frozen Shrimp

REGULATIONS providing for government inspection of production of fresh-iced and frozen shrimp and specialty shrimp products at the option of the packer were published in the Federal Register of October 31, 1951. Under the regulations the Food and Drug Administration of the Federal Security Agency can now furnish continuous inspection of the packing of the above products on application by the producers who meet the requirements of the regulations.

This service has been made available at the request of a packer of frozen shrimp and frozen shrimp products, under the provisions of 702A of the Federal Food, Drug, and Cosmetic Act. The service is purely voluntary and is paid for by the firms who take it. It is designed to help inspected plants produce seafood of high quality. To do this, the regulations set forth standards for factories, equipment, raw materials, and operating conditions which are in accord with best commercial practice.

The service will add a fraction of a cent per pound to the cost of finished shrimp products. Firms which use it are entitled to state on the label that their shrimp has been prepared under government supervision. Inquiries concerning the service should be addressed to Commissioner of Food and Drugs, Food and Drug Administration, Federal Security Agency, Washington 25, D.C.

Freezing Cooked and Prepared Foods

A BULLETIN designed to help housewives in the use of prepared frozen foods has been issued by the Oregon Experiment Station, prepared by Ruth C. Miller, Agnes M. Kolshorn and E. H. Wiegand. It covers preparation of cooked frozen foods, seasoning, cooking time, materials for packaging, methods of packaging, labelling, storage, thawing, storage time, and a handy table giving condensed, tabulated information on treatment of frozen cooked and prepared foods. Illustrated throughout, this booklet provides a guide for cooking frozen foods.

Research in Ice Industry

(Continued from page 27)

Cooperative Research

The program which I have outlined for you exceeds our budget by several thousand dollars. You are quite familiar with the fact that each year our Director has been very successful in turning stones and getting other people to contribute substantial sums of money, materials and services to this work. Consequently, we have been able to get a lot of research for each ice dollar invested. This we propose to continue, but tnere is a definite limit to this type of support.

This year our Department is happy to be able to bring to you what we believe to be another record of achievement, despite the fact that full time could not be devoted to research. I don't have time to remind you what the Department has done over the past five years—I don't think I need to. But before closing, I would like to say that I am convinced that research has done a lot for the entire industry. It has opened the way to vital new tonnage for many companies. It has provided the means for many companies to capitalize on these markets. It can do a lot more if we give it the opportunity. Its Director is now taking the significant discoveries to top men in some of the key spots in larger companies in order to make your local selling less difficult. In my opinion, this phase of our Association's work—what I would like to call top level selling—should be expanded.

Our research contribution to the future welfare of the Industry depends on three things—two of which are largely out of the hands of the Research Committee and the Director. One, is the Industry's yearly investment in the work. Our results to a large measure depend on what we're willing to put into it. Two, the factor over which we do have some control—getting the job done. I think we can get whatever work you want done, done—if you're willing to pay a reasonable price for it. Three, the real value of what will be done, the real value of research to you, the actual payoff is in your hands. It depends in the final analysis on what you do with it.

Freezing Plant Expands For Government Contracts

A GOVERNMENT loan of $310,000 has been received by the Winter Garden Freezer Co., Bells, Tenn. The company expects to close government contracts in the near future that will give its plant an output next year of about 9 million pounds of frozen foods, valued at two to five million dollars. A new 200,000 cubic feet refrigeration room, costing $250,000 is being completed.

New Maximum Limits Frozen Food Freight Rates

THE nation's railroads have announced a 6 cent per cwt. maximum increase in freight rates for frozen fruits, berries, vegetables and juices, effective December 1, 1951. This action will save the frozen food industry several hundred thousand dollars annually. Approval of the 6 cent maximum by the rail carriers came after the Transportation Committee of the National Association of Frozen Food Packers pleaded the case of the frozen food industry before the Chief Traffic Officers Committee of the carriers, meeting in Chicago on October 3. Mr. R. V. Harron, Chairman of the N.A.F.F.P. Committee, made the presentation to the railroads on behalf of the Association.

Prior to the recent action by the railroads, frozen foods were required to bear the full brunt of the increased freight rates granted to the rail carriers by the Interstate Commerce Commission, under Ex Parte 175 proceedings. The increases ranged from 6 to 9 percent per cwt. Competitive food products, such as canned and fresh fruits and vegetables, had been provided the 6 cent maximum in the I.C.C. action, but this favorable treatment was not extended to the frozen food industry before the intervention of the N.A.F.F.P. Transportation Committee.

Freezing Tenderizes Beef

ACCORDING to a study reported by Department of Agriculture scientists freezing seems to make beef somewhat more tender than unfrozen cuts. R. L. Hiner and O. G. Hankins of the Bureau of Animal Industry report that they studied the tenderizing effect of freezing on a variety of representative cuts from veal calves, 500-lb steers, 900-lb steers, three year old barren heifers, and 12-year old cows. In general, they said, natural tenderness which decreases with age of the animal, was increased by freezing. In these experiments all the beef was "aged" at temperatures just above freezing. Tenderness was measured by a mechanical shearing device.

Barclay Elected Director Frozen Food Packers

THE election of N. B. Barclay, president of Snow Crop Marketers, to the board of directors has been announced by the National Association of Frozen Food Packers. The association, with headquarters in Washington, D. C., has 125 member companies engaged in packing frozen fruits, vegetables, berries, and juices.

All Industry Exposition Held in Chicago Nov. 3-8

THE seventh All-Industry Refrigeration and Air Conditioning Exposition held on mile-long Navy Pier, Chicago, during the week of November 5 attracted several thousand members of the refrigerating industries. Products of some 200 manufacturers were exhibited, valued at about five million dollars.

The 14th annual convention of the Refrigeration Service Engineers Society was held November 3 to 6, with business and educational sessions, and the annual banquet and entertainment at the Morrison Hotel Sunday evening.

Annual meetings of the Refrigeration Equipment Wholesalers Association, the Refrigeration and Air Conditioning Contractors Association, and the Refrigeration Equipment Manufacturers' Association were held during the week.

Fires and Accidents

Chicago, Ill.—The roof of an icehouse at 9388 S. Anthony collapsed during a 4-11 alarm fire, injuring four firemen. The building, a rambling structure three stories high at the tallest point, had been used as an ice house by the City Products Corp. The fire broke out when workmen were using acetylene torches to cut away pipes that were part of the refrigeration equipment. Sparks ignited insulating sawdust.

Crawfordsville, Ind.—Explosion of ammonia in the compressor room of the Farmers Cooperative creamery plant in north Washington Street blew out the top of one of the compressor tanks.

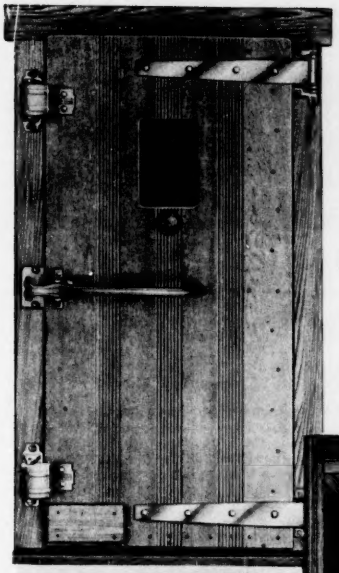
Elyria, Ohio—Fire swept the Walton Ice & Fuel plant causing serious injury to an employee and complete destruction of the ice plant. Damage was estimated at $75,000. Cause was not determined.

Rutland, Vt.—A disastrous $75,000 fire leveled eight buildings of the Eddy Ice Company plant on the Cold River Road. Destroyed were four old ice houses, two storage houses, a barn and a refrigerator storehouse. Two of the buildings were recently remodeled into cold storage plants and equipped with new machinery valued at approximately $23,000, according to Edward M. Copps, president-manager of the company. The plant was only partially insured, Mr. Copps said.

New Incorporation

New York, N. Y.—Articles of incorporation were filed with the office of the secretary of state, Albany, October 17, for Foodways, Inc., who deal in fish of all kinds, storage, freezing business. Capital stock was listed at 200 shares no par value. Directors: Samuel S. Goldberg, Irving Hatterer and Seymour Mark, whose addresses are at 521 5th Ave., New York City.

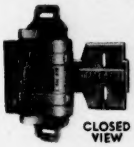
THIS IS A Butcher Boy COLD STORAGE DOOR



LEADER IN APPEARANCE AND CONSTRUCTION

Butcher Boy offers the ONLY cold storage door which will maintain a 100% tight seal and insure ease of opening and closing at all times. Butcher Boy equipment is built of the highest quality materials obtainable and constructed for greatest rigidity. Besides the doors and special features shown, Butcher Boy offers a complete service on special refrigerator windows and fronts. We will be pleased to give estimates on any cold storage problems. Send us your specifications. There is no obligation.

DISTINCTIVE Butcher Boy HARDWARE



Super-Seal FASTENERS

Maintain a 100% tight seal between the door gaskets and frame, thereby preventing WARPING and DOOR ICING. They are durable, modern and easy to install.

FEATURES

Adjustable Tension • Bronze Bearing • Steel Rollers • Extra Heavy Casting • Heavy Galvanized • Adjustment Feature • 2 Steel Springs.

VESTIBULE DOORS

Butcher Boy Vestibule doors are used where long periods of opening prevail. Doors are kept in closed position by an automatic self-closing device which prevents refrigeration losses.

A BUTCHER BOY *Exclusive* FEATURE

LONG LIFE due to vertical bevels.

STRENGTH because of cross-grain construction.

APPEARANCE due to the streamlined nature of the "Floating Joint."

"FINGER TIP" DOOR OPENERS

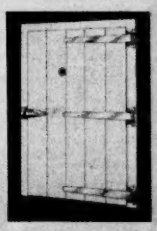
Minimize the effort of opening heavy cold storage doors by application of the laws of leverage. Extra heavy, long, modernistic handles. Easily installed on any door.

TRACK DOOR OPERATOR

The Butcher Boy Track Door operator is simple and practical. Its operation is SMOOTH—POSITIVE—AUTOMATIC. Made of SOLID BRONZE. Completely gasketed to prevent leaks in "closed" position.

METAL-CLAD DOORS

Butcher Boy offers this type of door for fire protection purposes. Joints and seams are folded and locked, no solder and no nail heads exposed.



SUPER-FREEZER (OVERLAP) DOORS

A special type of cold storage door designed primarily for near-zero or sub-zero temperatures. It prevents doors from becoming icy and therefore hard to open.

Since 1885 Butcher Boy PRODUCTS

BUTCHER BOY COLD STORAGE DOOR CO.

170-180 N. SANGAMON ST. ★ CHICAGO 7, ILL. U. S. A.

CONVENTION CALENDAR

AMERICAN SOCIETY OF REFRIGERATING ENGINEERS
December 2-5, 1951
Hotel Roosevelt, New Orleans, La.
M. T. TURPIN, Secretary

SOUTH CAROLINA ICE MANUFACTURERS ASSN.
December 3-4, 1951
Columbia Hotel, Columbia, S. C.
GEORGE L. ENGLISH, Secretary

DELTA STATES ICE ASSOCIATION
December 3-5, 1951
Buena Vista Hotel, Biloxi, Miss.
R. N. MILLING, Secretary

MISSOURI VALLEY ICE MANUFACTURERS ASSOCIATION
January 7-9, 1952
Hotel President, Kansas City, Mo.
V. A. ESPHORST, Secy.-Treas.

OKLAHOMA ASSOCIATION OF ICE INDUSTRIES
January 20-22, 1952
Burlingame Hotel, Bartlesville, Okla.
HARRY T. HUDSON, Exec. Secy.

MICHIGAN ICE INDUSTRIES ASSOCIATION
February 12-13, 1952
Detroit Leland Hotel, Detroit, Mich.
EDWARD W. JACKSON, Secy.

GEORGIA ICE MANUFACTURERS ASSOCIATION
February 19-20, 1952
Ansley Hotel, Atlanta, Ga.
RICHARD W. FLORRID, Secretary

SOUTHERN ICE EXCHANGE
February 19-20, 1952
Ansley Hotel, Atlanta, Ga.
RICHARD W. FLORRID, Secretary

OHIO ASSOCIATION OF ICE INDUSTRIES
February 25-26, 1952
Deshler Wallick, Columbus, Ohio
ELIZABETH SHANNON, Secretary

NORTH CAROLINA ICE ASSOCIATION
March 10-11, 1952
Hotel Sir Walter, Raleigh, N. C.
LEWIS H. POWELL, Secy.-Treas.

SOUTHWESTERN ICE MANUFACTURERS' ASSN.
March 12-14, 1952
Hotel Texas, Fort Worth, Texas
P. A. WEATHERRED, Secy-Counsel

ILLINOIS ASSOCIATION OF ICE INDUSTRIES
March 20-21, 1952
Leland Hotel, Springfield, Ill.
WM. D. WRIGHT, Secretary

NORTHWEST ASSOCIATION OF ICE INDUSTRIES
March 26-28, 1952
Yakima Hotel, Yakima, Wash.
L. F. MARSH, Secretary

INDIANA ASSOCIATION OF ICE INDUSTRIES
March 31-April 3, 1952
French Lick Springs Hotel
ROBT. W. WALTON, Secretary

NATIONAL ASSOCIATION OF REFRIGERATED WAREHOUSES
May 5-8, 1952
Roosevelt Hotel, New Orleans, La.
WM. DALTON, Executive Vice-Pres.

AMERICAN WAREHOUSEMEN'S ASSOCIATION
May 5-8, 1952
Roosevelt Hotel, New Orleans, La.
WM. DALTON, Executive Vice-Pres.

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317 Eglinton Ave., Toronto, Canada

DELTA STATES ICE ASSOCIATION
R. N. Milling, Secretary
Ouachita Bank Bldg., Monroe, La.

EASTERN STATES ICE ASSOCIATION
Samuel Freer, Secy.-Treas.
1044 Drexel Ave., Drexel Hill, Pa.

FLORIDA ICE ASSOCIATION
Muriel Washburn, Secretary
1926 Silver St., Jacksonville, Fla.

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Cincinnati Terminal Warehouses, Inc.
Cincinnati, Ohio

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Clinton Pure Ice Co., Clinton, Ill.

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Robert W. Walton, Secretary
Board of Trade Bldg., Indianapolis, Ind.

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Fred E. Kunkle, Secretary
City Ice Delivery Co.
335 So. Washington St., Wichita, Kans.

KENTUCKY ICE MANUFACTURERS ASSOCIATION
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429 S. Seventh St., Louisville, Ky.

MICHIGAN ICE INDUSTRIES ASSOCIATION
Edward W. Jackson, Secretary
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Booth Cold Storage Co., St. Louis, Mo.

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Garth A. Shoemaker, president
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Terminal Refrigerating & Warehousing Corp.
Washington, D. C.

NORTH CAROLINA ICE ASSOCIATION
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Diamond Ice & Storage Co.,
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1539 N. E. 37th Ave., Portland, Ore.

OHIO ASSOCIATION OF ICE INDUSTRIES
Elizabeth Shannon, Acting Secy.-Treas.
The Steubenville Ice Co., Steubenville, O.

OKLAHOMA ASSOCIATION OF ICE INDUSTRIES
Harry T. Hudson, Executive Secretary
708-9 Perrine Building, Oklahoma City, Okla.

PACIFIC STATES COLD STORAGE WAREHOUSEMEN'S ASSOCIATION
Jack L. Dawson, Secretary
461 Market St., San Francisco, Calif.

SOUTH CAROLINA ICE MANUFACTURERS ASS'N
Geo. L. English, Secretary
P. O. Box 603, Columbia, S. C.

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San Francisco, Calif.

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Richard W. Florrid, Secretary
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Tampa, Fla.

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Southwestern Ice & Cold Storage Co.,
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SOUTHWESTERN ICE MANUFACTURERS ASS'N
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Mercantile Bank Bldg., Dallas, Tex.

TENNESSEE ICE MANUFACTURERS ASSOCIATION
W. E. Harlan, Secretary
Mt. Pleasant Ice Co., Mt. Pleasant, Tenn.

TRI-STATE ASSOCIATION OF ICE INDUSTRIES
L. R. Girton, Secretary
260 Boyce-Greeley Bldg., Sioux Falls, S. D.

VIRGINIA ICE MANUFACTURERS ASSOCIATION
H. H. Snyder, Secretary
Alexandria, Va.

WEST VIRGINIA ASSOCIATION OF ICE INDUSTRIES
E. Dana Smith, Secretary
Diamond Ice & Coal Co., Charleston, W. Va.

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Paul F. Hoff, Secretary
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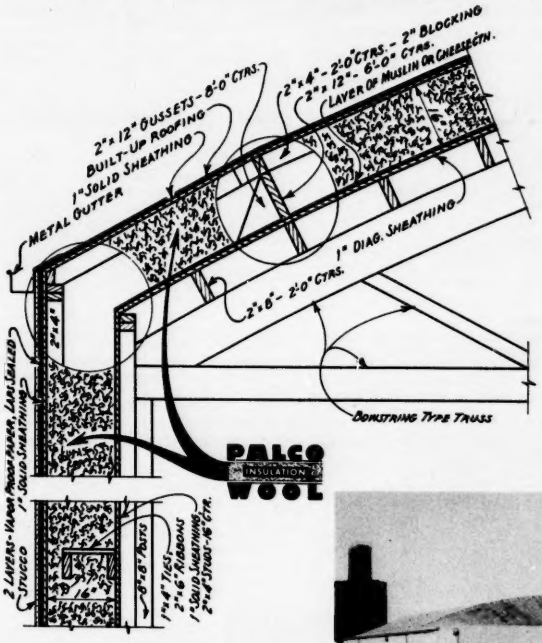
INSTALLATION FILE NO. 1018

Economy plus greater efficiency with PALCO INSULATION WOOL

16" THICKNESS PALCO WOOL INSULATION FOR LESS THAN 60¢ SQ. FT. APPLIED!



Latest bowstring type truss construction providing for full 16" thickness of Palco Wool Insulation in roof and side walls has been adopted as standard by National Ice & Cold Storage Co. of California. Accompanying detail shows how minimum through-connection of structural members takes full advantage of high insulating efficiency of Palco Wool (K factor of 2.6 Btu). Note complete vapor seal on exterior only, allowing insulation to maintain dryness by breathing to cold side. Palco Wool is selected as an ideal cold storage insulation for its flame-proofed protection, high efficiency, economy, light weight, non-settling resilience, and moisture resistance. It gives off no odors, is non-attractive to vermin and insects, and permanently resists fungus or decay.

Detail above shows construction of new National Ice & Cold Storage Co. plant at Riverside, Calif., pictured at right. On the basis of long experience, the firm has standardized on Palco Wool Insulation.

NATURE'S INSULATION · FROM AGE-OLD REDWOOD BARK · FLAMEPROOFED

Mail attached coupon today for more detailed information.

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IR-12

NEW PLANTS and IMPROVEMENTS

This Department each month presents the more important developments covering new constructions, as well as additions, improvements, remodeling, and installations of new equipment in ice and cold storage plants and other industrial plants that use refrigeration. News notes on all such new constructions and improvements are invited.

Arizona

Yuma, Ariz. — The Southwestern Ice and Cold Storage Company has received a $65,000 permit to build a new storage room.

Yuma, Ariz.—The Desert Ice Company is spending $40,000 for a cold storage room at 821 Third Street.

Arkansas

DeQueen, Ark.—Plans for a cold storage warehouse here are being sponsored by the chamber of commerce, hatchery men, poultry dealers and agriculture workers.

California

Adelanto, Calif.—The Deutschmann Company is now operating a new S & S ice vending station.

Biola, Calif.—The Biola Ice Company is now serving ice to citizens of this city 24 hours every day with a new S & S ice vending station.

Turlock, Calif.—The cold storage warehouse which is being erected here by Marshall Albee, as reported in the September issue of ICE AND REFRIGERATION has been held up pending release of approval for the construction by NPA. Enoch Christofferson, chairman of the chamber of commerce industrial committee, returned recently from a trip to Washington where he consulted with government officials and was promised speed up of the allocation of critical materials for the plant as rapidly as possible.

Louisiana

Gibsland, La.—Winlock Ice & Gin Company has established a new S & S ice vending station.

Maryland

Cumberland, Md. — Queen City Brewing Co. is now operating newly installed ice vending equipment.

Mexico

Agua Prienta, Mex.—The cannery of Frigorifica y Empacadora here, just across the Mexican line from Douglas, Ariz., is operating its new $150,000 meat chilling and curing addition. The addition, under construction since late July, includes 12,412 square feet of floor space. Largest unit is the chilling room of 7656 feet, with capacity to store 1000 carcasses for two days in the 30 F. temperature required by regulations. Two hundred workers are being employed.

Minnesota

Albert Lea, Minn.—The Artificial Ice Co. has been organized here to take over distribution of ice to this community of 18,000 since the Albert Lea Ice and Fuel Company discontinued distribution. The company is not engaged in ice manufacture but trucks the ice from the Rochester Ice & Fuel Co., Rochester, Minn. in seventeen ton quantities.

Tennessee

Bells, Tenn.—The Winter Garden Freezer Co. has received a government loan of $310,000 which will be utilized to build a new 200,000 cu ft refrigeration room costing $250,000. The additional $60,000 is being invested in new processing and harvesting machinery. Next year the plant will have an output of about 9 million pounds of frozen foods, valued at two to five million dollars.

Knoxville, Tenn.—Atlantic Ice Co., is planning an addition to its plant which will double the cold storage capacity to 600,000 sq ft.

Memphis, Tenn.—The largest cold storage warehouse in this section is to be built at Spottswood and Levant by the Mid-South Refrigerated Warehouse Co., William Goodman, president, announced. The cost is estimated at $1,810,000 and the building will cover 3½ acres. He also announced purchase of an adjoining 2½ acre tract from the Southern Railway for possible future expansion. The new warehouse is being erected by the same interests which own the Memphis Cold Storage Warehouse Co., of which Mr. Goodman is also president. The Defense Production Administration has issued a Certificate of Necessity for its construction. The warehouse will handle frozen foods and meats for the armed forces bases, atomic installations and defense plants in the area.

Memphis, Tenn.—Arctic Ice & Coal Co. here is now operating ten new S & S ice vending machines.

Texas

Elgin, Tex.—The Southland Corp. has installed several new S & S ice vending machines.

Llano, Tex.—Llano Ice & Cold Storage Company of this city is now operating a new S & S ice vending station.

Virginia

Waynesboro, Va.—The Cassco Corp., Corp., has installed ice vending equipment.

Washington

Long Beach, Wash. — Cranguyma Farms north of Long Beach are erecting a new warehouse to be used for freezer storage.

Sales and Reorganizations

Covington, Ky.—The Eckerlin Co., beef packers, and the Fred Burger & Co., beef and veal packers, both located in John Street for many years are about to become one firm. The Burger Company is purchasing the Eckerlin Co.

Alexandra, La.—Gulf Public Service Co. Inc., has sold its ice properties located at Minden, Arcadia and Ruston, C. Ray Wilson, Gulf vice president of this city, announced November 8. Mr. Wilson said the properties were sold on November 1 to North Louisiana Ice Co., represented by Wilford A. Dumas, Louis E. Hurley, Emmett E. Paxton and Ned G. Wilfong. The properties have a daily capacity of more than 100 tons of ice.

Carthage, Mo.—The Carthage Ice and Cold Storage Company has purchased the coal business of the Ross Brown Coal and Trucking Co.

Nevada, Mo.—Wallace Buck, manager of the American Service company plants here and at Fort Scott, announced that the company's Nevada ice routes, trucks and other delivery equipment have been sold to Frank Witter and his son-in-law, W. R. Bernhardt. The American Service company will continue to operate the ice manufacturing end of the business and the salesrooms set up at Nevada and Fort Scott.

Pawhuska, Okla.—Negotiations are under way for sale of the local packing plant facilities of the Osage Packing Corp.

Ontario, Ore.—The Reconstruction Finance Corp. is selling the Bridgford Quick Freeze plant here, and it is expected that Oregon Frozen Food company which has leased the plant for the past two years for the processing of frozen corn may be the new owners.

Altoona, Pa.—Blair Ice & Cold Storage Company has been sold to A. Namey, 3100-6th Ave., Altoona. Mr. Namey is a Schlitz beer distributor and is disposing of the ice-making equipment.

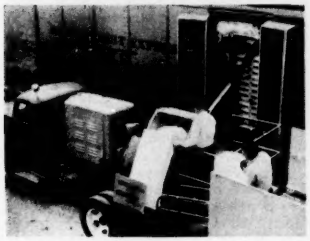
Erie, Pa.—The physical assets of the Wayne Brewing Co. at 17th and Parade St. is being sold. The plant and its equipment is valued at over a million dollars.

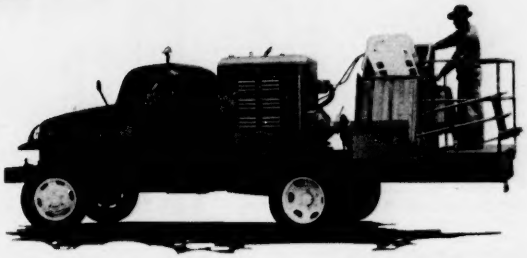
Estill, S. C.—Manning Lawton and Hugh Walker have purchased the Estill Ice Company, it was announced recently.

crushed ice service

is profitable business

CONVEYCO OFFERS ICE CRUSHERS FOR EVERY CONDITION...

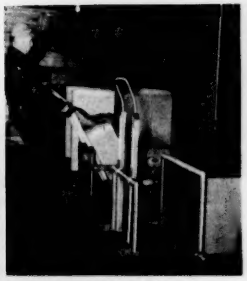


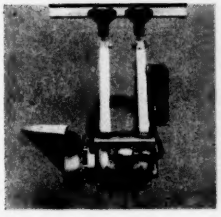


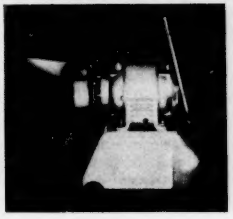
Are you losing out on profitable crushed ice business because you're not located on a railroad siding or truck terminal? Then get a Conveyco truck-mounted ice crusher-blower and take crushed ice service to your customers.

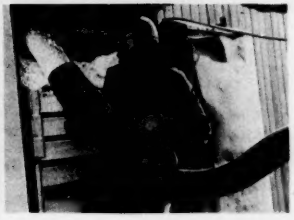
No matter what the conditions are, Conveyco has ice crushing, blowing and conveying equipment to meet your need. A glance at the equipment illustrated here gives you an idea of the variety of ice crushers and blowers available through Conveyco.

Don't overlook crushed ice profits any longer. If your present equipment is inadequate or obsolete, fill in the coupon below and get complete information on all ice equipment manufactured by Conveyco.









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THE CONVEYOR CO.

3260 EAST SLAUSON AVENUE

LOS ANGELES 58, CALIFORNIA

THE CONVEYOR CO.
3260 E. Slauson Ave., Los Angeles 58, Calif.

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Ice Blowers ☐ Crusher-Blowers ☐

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DEATHS

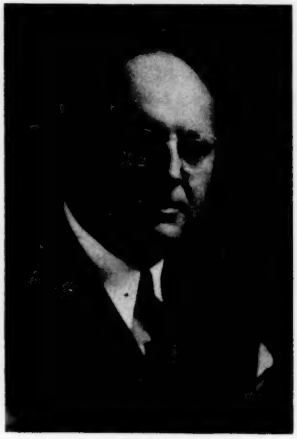
Theodor Schuman Behre

THE death of Theodor Schuman Behre, president of the Pelican Ice & Cold Storage Co., New Orleans, La., occurred Saturday, November 17. He was 63 years old. A native of Atlanta, Ga., Mr. Behre was a son of Charles H. Behre who founded the Pelican Ice Co. He was a graduate of Georgia Tech and Harvard University. After graduating from Harvard, he became assistant manager of the La Grange Ice & Fuel Co., La Grange, Ga. In 1912 he came to New Orleans and joined the Pelican Company. He became president of the company on the death of his father in 1949.

ROBERT M. ILLG, long engaged in the ice business in New Orleans, La., died November 2 enroute to a hospital. Mr. Illg was 53 years old. A native of New Orleans, he operated an ice delivery company serving the commercial section for some 35 years.

Harry S. Oderman

THE death of Harry S. Oderman, well known ice plant executive of Detroit, Mich., occurred Saturday, November 24. He had been president of the Detroit City Ice & Fuel Co. for 23 years. He was 60 years old. A native of Menasha, Wis., Mr. Oderman came to Detroit in 1928. He was a graduate of the University of Oklahoma, a member of the Detroit Gulf Club and the Rotary Club. He was an active member of the National Association of Ice Industries and during NRA days was chairman of the Committee on Arbitration and Appeals for the State of Michigan. He was an active member of the Michigan Ice Industries Association of which he served as president from 1932 to 1934.



Harry S. Oderman

CONRAD H. YOUNG, retired mechanical engineer and refrigeration technician, died at his summer home, Bass River, Mass. at the age of 80. He was a resident of Fort Myers, Fla. Mr. Young was a mechanical engineer with the Armstrong Cork Co., in Bridgeport, Conn., and was the company's eastern representative from 1917 to 1928 when he retired.

SAMUEL H. BERCH, 62, president of Arden Farms Company, Los Angeles, one of the West's largest dairy and ice cream concerns, died October 27 at his home in Beverly Hills, Calif. Mr. Berch was credited with being the originator of cubed ice cream.

What's New

MACHINERY
APPLIANCES • PROCESSES

Large Centrifugal Compressor Installed

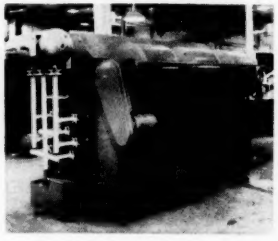
THE first large centrifugal ammonia compressor ever installed in this country, to be used for process refrigeration at the Monsanto Chemical Company plant, Nitro, West Virginia, was announced recently by Carrier Corporation. Carrier officials said the five stage centrifugal compressor driven by a 600 hp motor has been scheduled for installation in the Monsanto plant to double the capacity of an existing reciprocating ammonia system.

Carrier developed the first centrifugal refrigeration machine in this country nearly 30 years ago, it was pointed out in describing the new application. The new unit will serve as the low stage compressor in the Monsanto refrigeration plant, taking the amomnia gas at 25 pounds suction pressure and discharging it to the high stage at 75 pounds. Addition of the centrifugal unit will increase system capacity from 400 to 800 tons. The centrifugal was selected, according to the Carrier announcement, because of its simplicity, and because of low operating and maintenance costs.

The compressor will be of all ferrous construction for use with ammonia, and will be similar to those used for some years for air and gas compression in the petroleum and chemical processing industries.

No-Frost Spray Cooler

AN IMPROVED model No Frost Spray Cooler is announced by the Niagara Blower Co., applying to the refrigeration and refrigerated storage of products that are sensitive to the moisture content of the air, especially food products which are liable to dry out, shrink or discolor in the cold dry air.



Niagara Blower No-Frost Cooler.

The equipment differs from previous models in that the air enters through the fans and is blown through the units. The air passes over refrigeration coils and through a spray of "No Frost" Liquid solution which prevents the condensation of water and the formation of ice or frost on the coils. The chilled air, which may be as low as minus 20 F. passes direct from the spray chamber into the room thus it contains no reheat from the energy of the fans and, therefore, higher humidity air is made available.

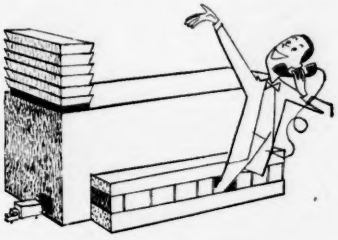
With no loss of cooling capacity from accumulation of frost on the refrigerating coils, no interruption for defrosting and no reheat added to the air, it is claimed that closer control of conditions is obtained with resulting improvement in the quality of products held in refrigerated storage. This has been found valuable in the storage of eggs and other perishables.

Ammonia when you want it where you want it and Fast...

Armour's 65 conveniently located stock points assure you prompt delivery of Anhydrous Ammonia where you want it—when you want it—and FAST.

Armour's Anhydrous Ammonia is pure and dry, free of moisture and non-condensable gases and, to insure trouble-free operations, every cylinder is tested and checked before shipping to give positive assurance of fine quality.

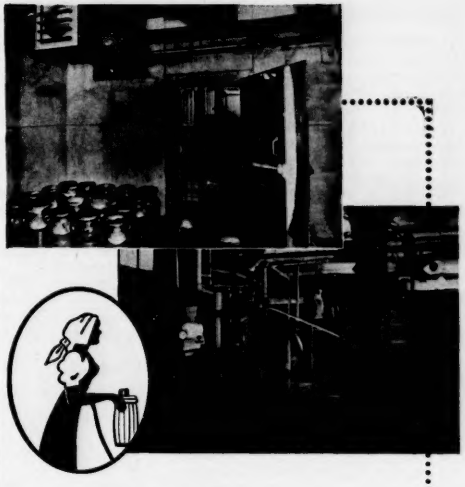
Available in 50-, 100- or 150-pound cylinders.



You can depend on Armour's Ammonia and Service

ARMOUR *Ammonia Division*

Armour and Company, 1355 W. 31st St., Chicago 9, Ill.



It's VILTER Again—

in the Golden Guernsey Dairy in Milwaukee

● Twenty years ago, in 1931, the Golden Guernsey Dairy Co-operative in Milwaukee bought its first Vilter refrigeration equipment. As Golden Guernsey has expanded, it has continued to specify Vilter when more equipment was needed. Hardly a year goes by without another Vilter addition to their modern, efficient plant.

To Golden Guernsey, Vilter has supplied vertical compressors, shell and tube condensers, liquid receivers, air cooling units, air blast units, supercapacity water coolers, and the Vilter Vertibay Coils in the ice cream hardening room.

Dairies, ice cream plants, and food processors have known for years that they can depend on Vilter. You'll find them re-ordering Vilter, as Golden Guernsey has done, time after time, because they've found that Vilter saves them money in upkeep, in operating costs, and in lack of wasteful "down time."

Vilter

Let your nearest Vilter Representative or distributor show you how you can save with Vilter.

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THE VILTER MANUFACTURING COMPANY
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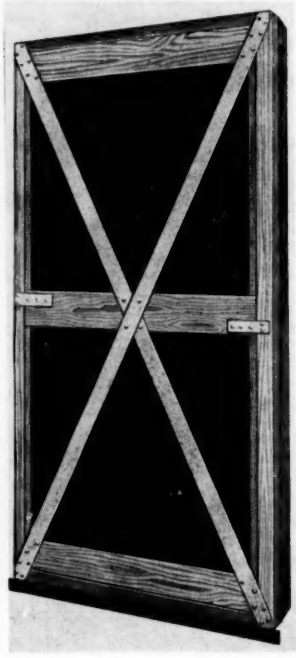
Ammonia and Freon Compressors • Pakicers • Evaporative and Shell & Tube Condensers • Pipe Coils • Valves and Fittings • Can Ice Plants

New Heat Exchangers

A NEW line of heat exchangers has been released by Acme Industries, Jackson, Mich. The new units replace the H and U-tube models previously manufactured by Acme. They are suitable for either Freon-12 or 22 and available in eleven models with capacities from 3 to 200 tons. With the new design, a gas to liquid side area ratio of 13 to 1 is now possible. The extremely low pressure drop of these units provide maximum gains for any desired super-heating effect. A new two-color, four page catalog describing the new heat exchangers is now available.

New Cooler-Freezer Doors

COOLER and freezer doors of new design and construction have been announced by Butcher Boy Cold Storage Door Co., Chicago. The special features of the new construction are designed primarily to make these refrigerator doors resistant to sagging or deterioration over a long period of years.



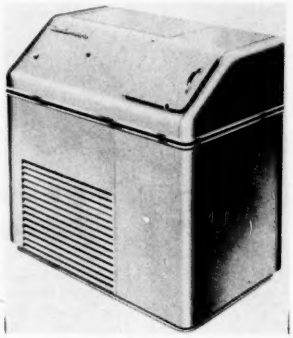
New Butcher Boy Cooler-freezer Door.

Diagonal bracing formed from steel straps in an X shape does much to retain the door in original form and prevent opening up of joints. In addition interlocked joints in the bracing provide tight rigid construction. Metal ties are also used on the center horizontal brace to give added security to the whole frame construction. These doors are available in panel type finish, metal clad or plywood panel construction. Insulation of any standard type may be specified by the purchaser.

These and other features of the new X type doors are fully described in a well illustrated catalog recently published by the manufacturer. It is available on request.

New Ice Cube Machine

A NEW ice cube machine has been introduced by the American Gas Machine Company, Albert Lea, Minn. It is completely automatic in operation and has an insulated storage bin. Sixty-nine cubes are frozen separately at one time and are then released into the storage bin by a flow of fresh water.



New Ice Cube Machine

Among the other features of this new machine is the streamlined "console" design that eliminates placement problems. It fits under any bar or may be placed in dining room or other open area. It operates on 110 volt current and only simple plumbing connections are necessary to tap the machine into drinking water supply.

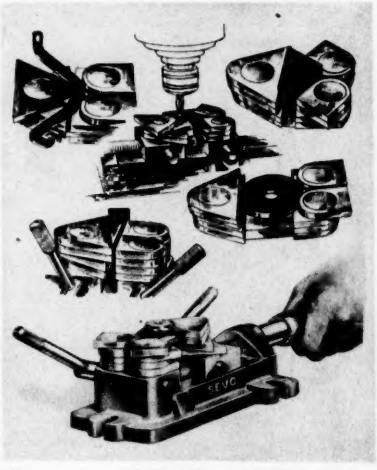
New Plate Suction Valve

AN IMPROVED suction valve of the plate type for use in refrigerating machines using ammonia has been developed by the Frick Co., Waynesboro, Pa. The new valve, known as the "Garland" type after the Company's chief engineer, has moving parts weighing one sixteenth as much as those in the former poppet valve. In addition, the ring plate has an opening on each side, giving the same port area with about half the lift.

In service, the use of the ring-plate valve often increases the capacity of the compressor. The complete new valve and cage are both lighter and less expensive than the old poppet style. The Garland valve is a complete assembly, so designed that no loose parts can get into the cylinder. It is made interchangeable with former poppet valves in Frick ammonia compressors of the vertical enclosed type. Garland valves are carried in stock by Frick Distributors in principal cities throughout this and overseas countries.

New Vise Holds Irregular Objects

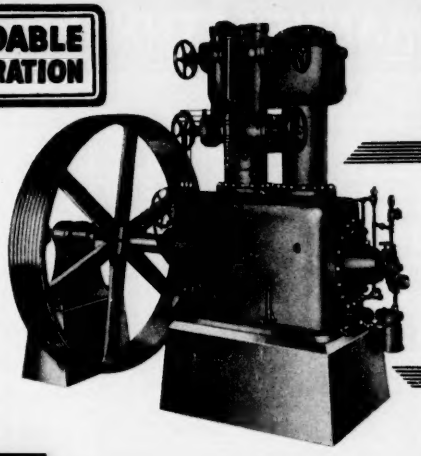
ANY bench worker who has had to lock a round or tapered object in a vise knows the trouble of getting a tight hold without damaging the work. A universal screw vise that instantly clamps round, tapered or irregular objects has just made its appearance on the market. Its jaws consist of a series of machined and ground flat plates which hinge or swivel in any desired direction to coordinate with the shape of the held object. These jaws are so designed that they can be moved in relation to each other, and the work piece can rest on a contact surface underneath. By turning the main screw the locking jaws position themselves and can then be locked to retain their directional position. Unlike conventional vises, the tightening screw requires only a slight turn, without imposing a heavy torque, to tightly grip the object. The vise jaws are made of precision ground Swedish steel. The distance between jaws is 2½ and 5 inches, in two sizes.



Sterling DEPENDABLE REFRIGERATION

GET READY NOW FOR '52

Place your order now for any of the wide range of STERLING compressor sizes. To provide for additional capacity . . . enlarged facilities . . . altered plant lay-out, look into the STERLING line. Engineered and built with advanced operating design features for efficiency and economy, rugged in the selection of materials for endurance, STERLING ammonia compressors are the product of more than fifty years of "know how" in the manufacturing of quality refrigeration equipment.



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MANUFACTURING CO.
SPRINGFIELD · · · MISSOURI.

MOST MODELS ARE AVAILABLE FOR IMMEDIATE DELIVERY

BETTER SERVICE-BIGGER PROFITS

TRI-PAK *Crusher-Slingers*

A CHOICE OF FIVE MODELS TO FIT YOUR PARTICULAR OPERATION

M-337

The M-337, known as "Mobil-Icer," is ideal for team track icing with a capacity of 55 tons per hour. Powered by an 8-cylinder Ford industrial engine.

G-100

The model G-100 rolls easily on 3 rubber-tired, ball bearinged wheels. Powered by an 8 cylinder Ford industrial engine. Capacity 55 tons per hour.

G-35

The G-35 crusher-slinger is for icing operations where its capacity of 750 pounds per minute is adequate. Takes full 300 pound blocks.

E-40

The E-40 combines high capacity with the quietness and dependability of the electric motor. Capacity 55 tons per hour. Powered by a 10 HP electric motor for crushing, 30 HP motor for slinging.

E-13

The E-13 has a capacity of 600 pounds per minute. Uses one 3 HP and one 10 HP electric motor.

There is a Tri-Pak ice crusher-slinger for every icing need. Whether you ice fishing boats, top ice carloads of vegetables, or re-ice refrigerator trucks, one of Tri-Pak's five sturdy, dependable units is size-rated for your job. All Tri-Pak crusher-slingers save labor by taking full-sized 300 pound blocks of ice. You can depend on these well engineered, sturdily built icing units.

The "Mobil-Icer" is here icing a carload of carrots at the rate of 5 tons every 7 minutes. The trailer mounted "Mobil-Icer" is ideal for team track icing as it can be towed by the truck carrying the ice. The unit is powered by an 8-cylinder Ford industrial engine. Capacity is 55 tons per hour.

TRI-PAK MACHINERY SERVICE, Inc. ★ HARLINGEN TEXAS

YOUR CATALOG

TRI-PAK MACHINERY SERVICE, INC.
HARLINGEN, TEXAS

Please send us your icing equipment catalog.

NAME _____

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MANUFACTURERS' NEWS

Acme Elects Bassett To Board of Directors

AT THE annual meeting of stockholders of Acme Industries, Inc., Jackson, Mich., H. Y. Bassett, vice-president, Calumet & Hecla Consolidated Copper Co. and general manager of its Wolverine Tube Division of Detroit, was elected to the Board of Directors.

H. Y. Bassett

According to Kenneth W. Weatherwax, president, the election of Mr. Bassett to the Acme Industries management group is part of the company's current expansion program which resulted in a sales increase of 84 percent during the current year. The company manufacturers components for the refrigeration and air conditioning industry, and recently introduced the Flow-Cold Liquid Chiller, which is gaining rapid acceptance in the trade.

Other directors elected at the annual meeting include, K. A. Weatherwax, C. E. Weatherwax, and P. A. Weatherwax, all of Jackson, Mich., and Richard C. Weatherwax of Madison, Wis.

Gifford Wood Contest At National Ice Convention

THE Gifford-Wood Co., at its exhibit booth at the National ice convention in Houston, Tex., offered two prizes for the best estimate on the average number of ice cubes used daily by the Astor Hotel, New York City. Two prizes each $50. in merchandise were awarded to Mrs. Lynn L. Belcher, Pueblo, Colo., whose estimate was 75,000 and Roy H. Johnson, Rosebud, Tex. who estimated 74,696. The correct answer was 75,000, this information being furnished by Mr. Waite, chief engineer of the Astor Hotel. There were 198 entries in the contest.

U. S. Air Conditioning Corp. Names Chief Engineer

THE appointment of A. J. Mallinckrodt as chief engineer of the United States Air Conditioning Corporation is announced by A. A. Feinberg, president of the Minneapolis firm. Formerly manager of engineering for the Baker Refrigeration Corporation, he will direct all design, development and research engineering activities of usAIRco in his new position.

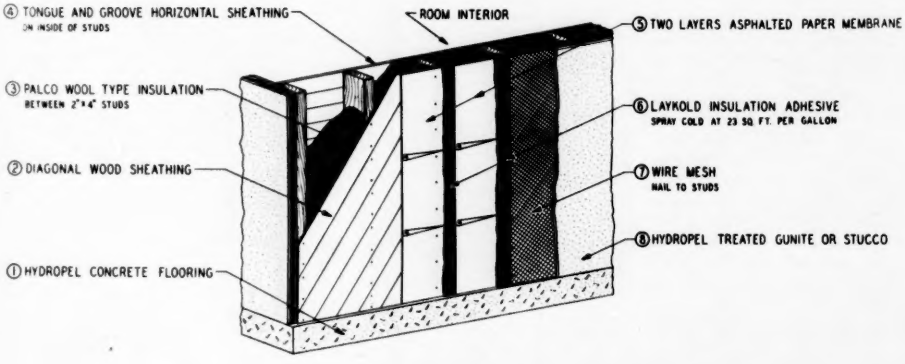
A graduate of the University of Missouri, Mr. Mallinckrodt is a licensed professional engineer, a member of the American Society of Refrigeration Engineers and of Tau Beta Pi, honorary engineering fraternity. He was previously associated with the Carrier Corporation for four years and served for three years as manager of the refrigeration department of Edward H. Reuss, Jr., Inc., a distributor for the Baker Ice Machine Company.

Laykold® ASPHALT SPECIALTIES

DATA SHEET No. 3

How to Insulate 34° to 40° F.

PRODUCE PRE-COOLING ROOMS


④ TONGUE AND GROOVE HORIZONTAL SHEATHING ON INSIDE OF STUDS
ROOM INTERIOR
⑤ TWO LAYERS ASPHALTED PAPER MEMBRANE
③ PALCO WOOL TYPE INSULATION BETWEEN 2"×4" STUDS
⑥ LAYKOLD INSULATION ADHESIVE SPRAY COLD AT 23 SQ. FT. PER GALLON
② DIAGONAL WOOD SHEATHING
⑦ WIRE MESH NAIL TO STUDS
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① HYDROPEL CONCRETE FLOORING

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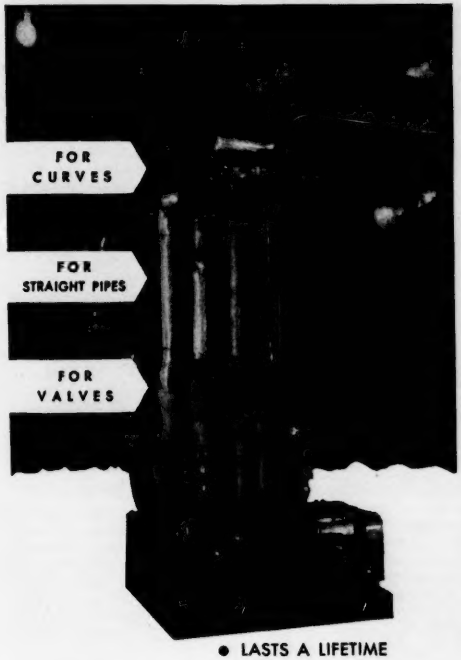

- LASTS A LIFETIME
- EASILY INSTALLED
- APPLIES WITHOUT WASTE

for Maximum Efficiency

SPECIFY ALL-HAIR

OZITE

INSULATING FELT

OZITE All-Hair Felt has been the best insulation for the refrigeration industry for over half a century. Here's why —

. . . low conductivity provides efficient heat barrier . . . allows close temperature control . . . permits maximum capacity of refrigeration units . . . reduces power consumption . . . does not rot or pack down — resists fire.

For all of the facts about time-proven OZITE send for 4-page Bulletin No. 300.

AMERICAN HAIR & FELT COMPANY

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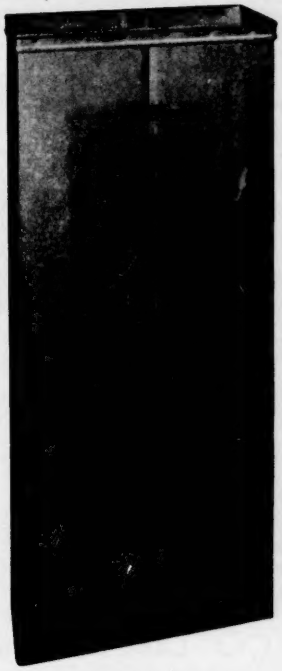
Chicago 54, Illinois



Welded Cans
Integral Tube Cans
Arctic Pownall Cans
Can Baskets
Condenser Trough

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Industrial Trucks and Trailers

THE OHIO GALVANIZING & MFG. CO.
NILES OHIO

York Corporation Elects New Officers

THE election of Donald M. Magor to the office of vice-president and controller and William F. Lynne as secretary and treasurer of the York Corporation has been announced by Stewart E. Lauer, president.

Mr. Magor has been controller of the corporation since 1939 and has served as a member of the general management committee since that time. Upon completing his education at the University of Utah and the La Salle Extension University in accounting, he joined the Corporation in 1918. He was treasurer of the Seattle district office from 1922 to 1927, when he assumed the same duties in the California district office in Los Angeles. He moved to York headquarters in 1931 and became assistant controller in 1935. He has been past president of the York Chapter of the National Association of Cost Accountants. He is a member of the Controllers Institute of America and of the Accounting Council of the Machinery & Allied Products Institute in Chicago.

William F. Lynne has been associated with the Corporation since 1935 in the accounting end of the business. He became Assistant Controller in 1939, subsequently Assistant Secretary and Treasurer. A graduate of the Wharton School of the University of Pennsylvania, his early experience was with the Philadelphia National Bank and the Federal Reserve Bank in Philadelphia over a period of four years. He then entered the public accounting profession with

Donald M. Magor

William F. Lynne

Barrow, Wade, Guthrie & Company, during which period he obtained his C.P.A. degree from Pennsylvania. He is a member of the Controllers Institute, American Institute of Accountants, National Association of Cost Accountants and the American Society of Corporate Secretaries.

The position of Assistant Controller will be filled by R. J. Halloran, who has been a member of the Controller's Division since early 1947.

Jamison Opens Branch Office in Omaha

THE opening of a direct branch office in Omaha, Neb. has been announced by Jamison Cold Storage Door Company of Hagerstown, Md. This office will service the requirements of Jamison customers located in the states of Nebraska and South Dakota, as well as those located in

A. C. Hoffbauer

Iowa west of and including Des Moines. The office will be in charge of A. C. Hoffbauer. Mr. Hoffbauer has been part of the Jamison sales organization for some years. He has extensive field experience, is factory trained and fully equipped to render Jamison customers superior service.

DIMCO CAST ALUMINUM FIN EVAPORATING COIL

★ *Saves Space*

★ *Saves Weight*

★ *Saves Cost*

CAN BE USED WITH ANY REFRIGERANT
SALES AGENCIES SOLICITED

Manufactured by

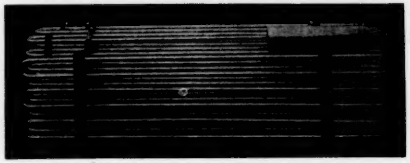
DETROIT ICE MACHINE COMPANY
2615 Twelfth St., Detroit 16, Mich.

DIMCO Fin Coils solve low headroom problem
View of Mezzanine Lard Storage Room
Peters Sausage Company, Detroit, Mich.

QUALITY COILS FOR ALL APPLICATIONS

WELDED HEADERS, PIPE BENDS AND AMMONIA RECEIVERS

Whether your next job be for a single bend, or coil or complete Piping system, Chicago Nipple can supply your requirements. Experienced workmen, practical engineers, and modern equipment reflect the quality of our products.



Coils are of selected ammonia pipe—all joints are electrically welded—checked under water with an air pressure of 300 pounds to guarantee tightness.

SEND DRAWING OR BLUE PRINT FOR QUOTATION

CHICAGO NIPPLE MFG. CO.
1997 Clybourn Ave., Chicago 14, Ill.

RECO Opens New York City Headquarters

REFRIGERATION Engineering Corporation, Philadelphia, Pa., has announced the official opening of new company headquarters for its Reco Products Division and Reco International Division at 150 Nassau St., New York City. The company has long maintained its headquarters in Philadelphia. With the opening of its Emporia, Va. plant about two years ago and the subsequent removal of the Philadelphia sheet metal operations to Emporia, it was deemed advisable to move the administrative offices to New York City. It is contemplated that all administrative and sales functions will be transferred from the Philadelphia Office at 2020 Naudain Street, to the New York Office on or about January 1, 1952.

ACRMA Elects Officers

AT THE recent meeting of the Board of Directors of the Air Conditioning and Refrigerating Machinery Association, J. F. Knoff, general sales manager of Airtemp Division, Chrysler Corporation, Dayton, Ohio, and M. E. Mooney, vice-president of Baker Refrigeration Corporation, South Windham, Me., were elected to membership on the ACRMA Board. At the same meeting, A. P. Shanklin, Vice President of Carrier Corporation, Syracuse, N. Y., and Chairman of ACRMA's executive committee, was elected president for the balance of the Association year, replacing Fred W. Smith who has retired from industry activities. George E. Wallis, president, The Creamery Package Manufacturing Company, Chicago, Ill., was elected Vice-President, succeeding C. S. Stackpole.

CATALOGS and BULLETINS

Catalog on Pipe Coils

ACME INDUSTRIES, INC., Jackson, Mich., manufacturers of air conditioning and refrigeration, has published catalog number 26-B on Pipe Coils. This brochure covers various styles of pipe coils which Acme manufacturers, illustrating such types as spiral, rectangular, flat, oval and double coils.

General specifications and bending data is furnished and a compact method of selection is also found. Tables of heat transfer coefficients for pipe coils in both still air and water and circulating water and air complete the catalog.

Free copies may be obtained by writing to Acme Industries Inc., Jackson, Mich.

New Piston Ring Catalog

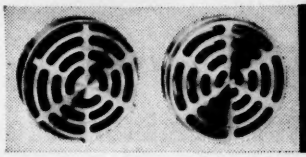
A NEW catalog of the Safety Seal Piston Ring Company, Fort Worth, Texas describes the Safety Seal line of industrial rings, and contains operating data and engineering tables that make it a useful reference book for operating engineers and purchasing agents. Although Safety Seal Piston Ring Company is a relatively young manufacturing firm, it is owned and operated by men who have devoted many years to the application of industrial piston rings.

Most engineers, it points out, have long recognized the importance of a good sealing ring and the sealing rings of the past were satisfactory for the equipment available for their day. However increased compression and firing pressure of the latest type internal combustion engines have increased the demand for a sealing ring designed for present day operations.

The Safety Seal Ring is engineered for pressure - balanced circularity, which means the sealing member is so designed that outward pressure against the cylinder wall is controlled so that ring-to-cylinder wall pressures are avoided.

Copies of the catalog may be obtained from the office of The Safety Seal Piston Ring Company, Fort Worth, Texas.

has no equal in the race for greater output



for they assure maximum compressor efficiency

It is a matter of record that everytime an ordinary compressor valve is replaced with a specially designed VOSS valve, the immediate result is increased efficiency and greater output . . . and this record covers thousands of installations, as letters and reports testify.

VOSS VALVES and PLATES are made to specifications for al types of air, gas and ammonia compressors; from 1 to 16" in diameter and for pressures from 3 to 4,000 pounds and for speeds from 110 to 1750 rpm.

VOSS VALVES and PLATES are NOT STAMPED; they are milled and machined for perfect fit; of finest heat treated alloyed steels; they are ductile; resist fracture, high temperatures and corrosion; withstand fatigue; won't work-harden, chip, splinter, crack or score cylinder walls.

INCREASE EFFICIENCY AND OBTAIN GREATER OUTPUT . . . send us the name, bore, stroke and speed of your compressors. Our detailed proposal will be sent without obligation.

VOSS VALVES and PLATES ASSURE

- Quiet, vibration-free operation
- 20 to 60% more valve area
- Less power consumption
- Low pressure loss
- Normal discharge temperature
- Lower operating costs
- 35% more work

J. H. H. VOSS VALVES
REG. U.S. PAT. OFF.

J. H. H. VOSS CO.
INCORPORATED

783 EAST 144th STREET, NEW YORK 54, N. Y.

New Vacuum Processing Systems Catalog

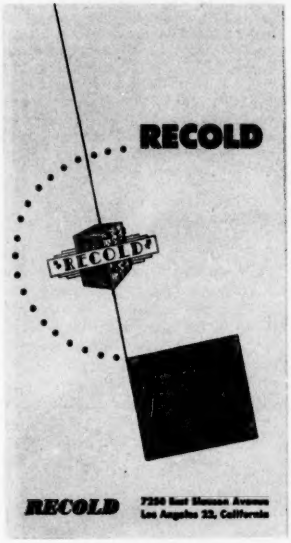
A NEW brochure on complete vacuum processing systems has been issued by the F. J. Stokes Machine Company, 5500 Tabor Road, Philadelphia, Pa. The 12-page catalog describes, pictures and gives complete specification tables of many types of vacuum equipment widely used in industrial processes, in private and government laboratories, and in schools and universities throughout the world. These include rotary and rotating vacuum dryers, vacuum shelf dryers, freeze-drying equipment, impregnators, extraction and solvent recovery apparatus, and vacuum pumps. A copy of the new publication, Catalog No. 715, "Complete Vacuum Processing Systems," is available by writing to the company.

Bulletin on Compressors

AN ICE and Frost bulletin has been issued by The Frick Co., Waynesboro, Pa. illustrating and describing Frick enclosed ammonia compressors. It covers general and special features as applied to ice making and other specific industries. An interesting feature is a photo-diagram, with description of each part.

New Pocket Data Book Introduced by Recold

THE new Recold Pocket Data Book that was seen for the first time at the All-Industry Show in Chicago, is now ready for distribution according to an announcement made by Harry Quinn, Director of Sales for Refrigeration Engineering, Inc., whose company publishes the book.



Front Cover, new Recold Pocket data book.

This book, it is claimed, is the first to be devoted exclusively to low side refrigeration. Compact, in a handy pocket size, 3¾ in. x 7 in., it contains 52 pages of commercial refrigeration and air conditioning equipment data and in addition a wealth of engineering information.

In addition to containing complete data on the full line of Recold equipment, the book has many pages devoted to factual information that shows how to figure refrigerator loads of various dimensions, for boxes using either 4 in. or 6 in. of insulation.

Heat loads and coli sizes are given in tables based on average T.D. with conversion factors for other levels. It contains also much information on storage requirements for perishable foods. It will be a valuable addition to any file of refrigeration and air conditioning data and is something which everyone in the industry will want for handy, quick reference.

Copies may be had free upon request by writing the factory direct, Refrigeration Engineering Inc., 7250 East Slauson Ave., Los Angeles 22, Calif.

Easier and Cheaper with

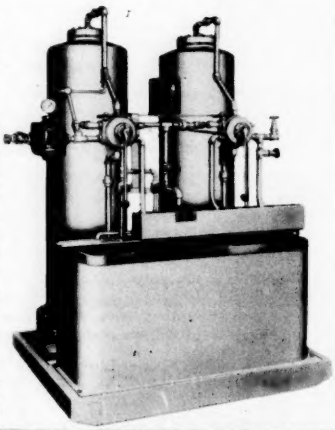
INDUSTRIAL Water Demineralizer

It's worth looking into . . .

The demineralization of water is not something new. It is used in the food industry, in the chemical and other industrial processing where chemically pure water is used in quantity. The very low cost warrants your looking into it.

Here are some of the advantages you get with an INDUSTRIAL demineralizer in ice making. Since the dissolved mineral salts in ordinary water are removed in passing through the ion-exchange resins, core-water removal and replacement is unnecessary. Losses due to cracking are greatly reduced. Freezing at the lower brine temperature increases daily yield. And the bulk of the cake of ice is clearer—your customers will notice that.

If you will send us an analysis of the water you are using, the quantity you need, and at what rate (gallons per hour) we will send you information on INDUSTRIAL demineralizers, estimate of costs, performance data, etc. Better do it now.



A typical two-bed INDUSTRIAL Water Demineralizer. Standard models available with capacities up to 1000 gph. Special units of any capacity engineered to requirements.

FILTERS Pressure Type · PUMPS Centrifugal · CORROSION TESTING APPARATUS Salt Fog • Humidity

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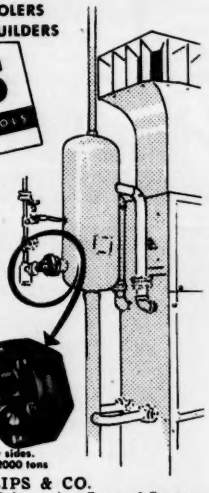
RUBBER DIVISION Vulcanized Linings • Molded Products · WATER DEMINERALIZERS

How to assure
MAXIMUM B.T.U. TRANSFER
in "Packaged" Cooling Units

AIR COOLERS • WATER COOLERS
SHARP FREEZERS • ICE BUILDERS

Use
PHILLIPS
FLOAT CONTROLS



Instant response to wide variation in load is one major reason why the use of Phillips Float Controls contributes to high heat transfer efficiency in practically all cooling units. In addition, you gain maximum flexibility with a fewer number of valves to carry in stock because Phillips No. 300 and No. 301 Valves provide capacities of 2 to 50 tons for handling a majority of applications with the same mounting.

For complete satisfaction in Float Controls and Regulating Valves, combined with efficient engineering service help—willingly given—call on Phillips.

No. 300 and 301 Valves have Cartridge Construction: Direct Feed—7 orifice sizes; Remote Feed—8 orifice sizes.

Other Control Valves for high or low sides. Freon: 1 to 1000 tons, Ammonia: 1 to 2000 tons

H. A. PHILLIPS & CO.
Designers and Engineers • Refrigeration Control Systems
3255 W. CARROLL AVE. • CHICAGO 24, ILLINOIS

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ICE DEALERS SUPPLIES

Only the Highest Quality Merchandise and efficient service necessary for the proper and profitable operation of your business. Write for our 1951 catalog.

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CEMCO

Double Gig Ice Hoist
Fast - Sturdy - Dependable -

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THE CAPITAL ELEVATOR & MFG. CO.
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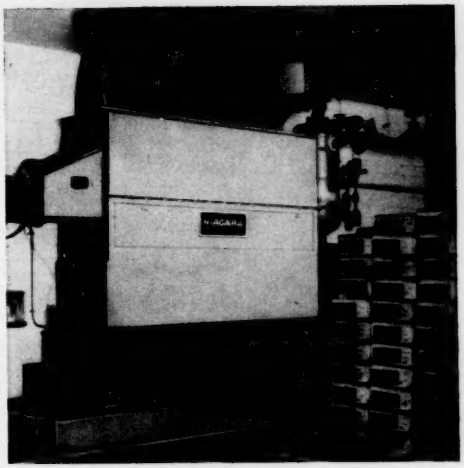


TEMPERATURES NEVER RISE... with NIAGARA "NO-FROST"

● With the Niagara "No-Frost" Method, your refrigerating operation is never interrupted for defrosting since at no time is there ever any accumulation of ice or frost on the coils of the Niagara "No-Frost" Spray Cooler.

If you are *pre-cooling*, the full capacity is always there to handle the "live load" and you get quicker chilling of your product to the core with no rise in temperature at any time. If you are *freezing*, the process is continuous and faster, and you get more production. If you are *holding* fresh or frozen food, there is never any temperature rise to endanger the quality.

The Niagara "No-Frost" Method saves money in its operation. A user recently said: "We added a new freezing room to our plant without any additional cost for power". This was accomplished because the Niagara Aeropass Condenser held the head pressure down to the minimum for the entire plant, while the Niagara "No-Frost" Spray Cooler operated at higher suction pressure.

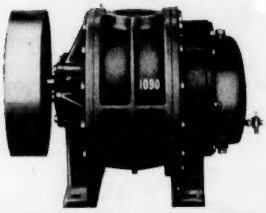
Write for Niagara "No-Frost" Bulletin 105 and details of operation for the type of refrigeration in which you are interested.

NIAGARA BLOWER COMPANY
Over 30 Years of Service in Industrial Air Engineering
405 Lexington Ave. Dept. IC New York 17, N. Y.

District Engineers in Principal Cities

INDUSTRIAL COOLING HEATING • DRYING
NIAGARA
HUMIDIFYING • AIR ENGINEERING EQUIPMENT

CURES
V·P·L WEATHER WORRIES!
In hot June or cold December, you can count on positive Volume at required Pressures and Low power cost from R-C Rotary Positive Blowers. Since the first raw ice plant was built, these simple, sturdy units have proved their reliability and economy. Ask us about your needs or write for free Bulletin 21-B-37.
Roots-Connersville Blower Corporation
510 Columbia Avenue, Connersville, Indiana



ROOTS-CONNERSVILLE
ONE OF THE DRESSER INDUSTRIES

SERVING THE ICE INDUSTRY FOR 20 YEARS
Dependable.. Automatic.. Refrigerated
S&S ICE VENDING STATIONS
AND ICE VENDING EQUIPMENT

Write, Phone or Wire for Full Details and Prices!

S&S Vending Machine Co.
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Philadelphia Pipe Coils

ESTABLISHED 1890
Continuous Welded Pipe Coils of Any Metal, Size or Design
PHILADELPHIA PIPE BENDING CO.
FIFTH STREET & N. P. R. R
PHILADELPHIA

NOZZLES • DROP TUBES • CAN DOGS • CAN FILLERS • BLOWERS • BRACKETS • BAGS • HOISTS
• ICE CRUSHERS •
CLEAR RAW WATER AIR AGITATION SYSTEMS
REPLACEMENT PARTS — ICE CRUSHING EQUIPMENT
ICE SIZING EQUIPMENT — ICE DELIVERY EQUIPMENT
ICE HANDLING EQUIPMENT
PROMPT DELIVERIES — LOW PRICES
• RUBBER TUBING •
ICE PLANT EQUIPMENT CO., Inc.
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TUBE CLEANERS • PUMPS • FILTERS • VALVES • ICE TONGS • THERMOMETERS • ICE PICKS

THE BUYERS DIRECTORY

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ABSORBERS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

AIR AGITATING SYSTEMS AND FITTINGS
Ice Plant Equipment Co., Inc. Philadelphia, Pa.

AIR COMPRESSORS
Frick Co., Waynesboro, Pa.

AIR CONDITIONING EQUIPMENT
Frick Co., Waynesboro, Pa.
Niagara Blower Co., New York, N.Y.

AMMONIA COMPRESSOR VALVES
Frick Co., Waynesboro, Pa.

AMMONIA COMPRESSORS
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA CONTROL DEVICES
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.

AMMONIA FLOAT VALVES
Armstrong Machine Works, Three Rivers, Mich.
Frick Co., Waynesvoro, Pa.
Phillips & Co., H. A., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA MANUFACTURERS
Armour Ammonia Div., Armour & Co., Chicago, Ill.
Barrett Div., The, Allied Chemical & Dye Corp., New York, N. Y.
Bower Chemical Mfg. Co., Henry Philadelphia, Pa.
du Pont, Polychemicals Dept., Wilmington, Delaware

AMMONIA MASKS
Ice Plant Equipment Co., Inc., Philadelphia, Pa.

AMMONIA PURIFIERS
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
International Salt Co. Inc., Scranton, Pa.
Vilter Mfg. Co., Milwaukee, Wisc.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA RECEIVERS
Acme Industries, Inc., Jackson, Mich.
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. F., Ridgefield Park, N. J.
National Pipe Bending Co., New Haven, Conn.
Rempe Company, Chicago, Ill.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA VALVES & FITTINGS
Acme Industries, Inc., Jackson, Mich.
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

ARCHITECTS AND ENGINEERS
Greene, Van R. H., New York, N. Y.
Ophuis & Associates, Fred, New York, N. Y.

ASPHALT PRODUCTS
American Bitumuls & Asphalt Co. San Francisco, Calif.

AUTOMATIC CONTROL DEVICES
Alco Valve Co., St. Louis, Mo.
Armstrong Machine Works, Three Rivers, Mich.
Frick Co., Waynesboro, Pa.
Phillips & Co., H. A., Chicago, Ill.
Rex Engineering & Sales Co., Oklahoma City, Okla.
Vilter Mfg. Co., Milwaukee, Wis.

BAGS, ICE
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Corp., New York, N. Y.

BAGS, WATERPROOF PAPER
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Co., New York, N. Y.

BEER COOLERS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

BLOWERS
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

BOILERS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

BOILER TUBES
Byers Co., A. M., Pittsburgh, Pa.

BOOKS—TECHNICAL
Nickerson & Collins Co., Chicago, Ill.

BRINE CIRCULATORS
Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Roots-Connersville Blower Corp., Connersville, Ky.

BRINE COOLERS
Acme Industries, Inc., Jackson, Mich.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

BRINE SPRAY COOLING
Acme Industries, Inc., Jackson, Mich.
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.

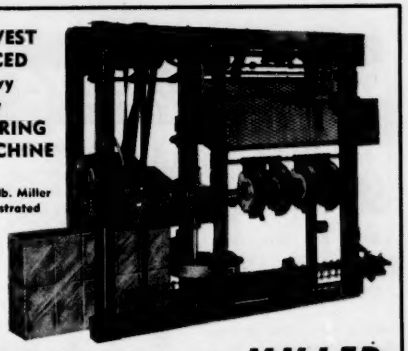
BRINE TREATMENT
International Salt Co. Inc., Scranton, Pa.

CAN DUMPS
Frick Co., Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.

(Buyers Directory continued on next page)

LOWEST PRICED Heavy Duty SCORING MACHINE

300 lb. Miller illustrated



PERFECTION-made MILLER

300 LB. MODEL SCORES OVER 50 TONS PER HOUR

400 lb. MODEL SCORES 65 TONS PER HOUR

• Keep your investment at a minimum with a Miller Scoring Machine . . . the lowest priced heavy-duty scoring machine on the market. The Miller is fast, economical, dependable in operation and maintenance . . . a fact proved by the hundreds of machines in service all over the country.

Write, wire or call for complete details:

RE-BUILDING SERVICE

• Your present Perfection or Miller machines rebuilt to perform like new at minimum cost. *This service carries a "New Machine" guarantee.*

• Also a complete stock of spare parts for Perfection and Miller Scorers available for immediate shipment.

The Perfection Ice Scoring Machine Co.
P.O. Box 2140, Fort Worth Texas, Phone ED 1258

New **REMPE**

HX-CHANGERS
solve many problems of heating and cooling liquids and vapors

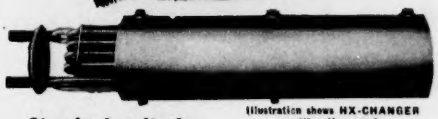


Illustration shows HX-CHANGER with coil exposed.

Standard units for

- Water cooled refrigerant condensers.
- Converting air-cooled compressors to water-cooled service.
- Combination water-cooled condenser-receiver.
- Refrigerant to refrigerant heat exchangers on low temperature cascade and two-stage systems.
- Water chiller using refrigerant as cooling medium.
- Cooling lubricating and cutting oils using refrigerant.
- Heating oils, chemicals, water and other liquids with steam.

Write for bulletin.

REMPE CO.

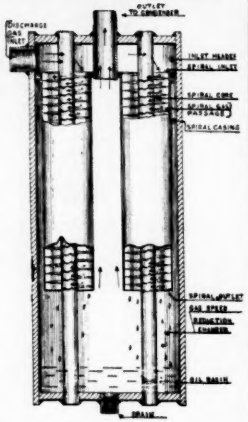
REMPE COMPANY

348 N. Sacramento Blvd., Chicago 12, Ill.

"King Zeero"

OIL SEPARATOR

STOPS OIL FROM ENTERING CONDENSER RECEIVER AND LOW SIDE



Allows operation as was originally intended. Simple in operation — no parts to wear out — no screens, metal wool or any close screens to clog, raise discharge pressures and cut down capacity.

When used in connection with air compressors, water is also separated with the oil.

Built for years of trouble free service. Mechanical details on request.

THE KING ZEERO COMPANY
1447-55 Montrose Ave., Chicago 13, Ill.

Your Assurance of Best Quality

REFRIGERATION COILS

made by The National

PIPE BENDING COMPANY

All features that you demand are furnished regularly in National Pipe Bending Refrigeration coils—smooth bends, perfect welds, measurements exact.

For long service, specify coils by the National

Pipe Bending Co.

Established 1883

162 River St., New Haven, Conn.

THE BUYERS

INDEX TO ADVERTISEMENTS OF THESE FIRMS—PAGE 88

CAN DUMPS (Continued)
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.

CAR ICING EQUIPMENT
Capital Elevator & Mfg. Co., Columbus, Ohio
Conveyor Co., The, Los Angeles, Calif.
Gifford-Wood Co., Hudson, N. Y.
Lilly Co., The, Memphis, Tenn.
Tri-Pak Machinery Service Inc., Harlingen, Texas

COILS
Acme Industries, Inc., Jackson, Mich.
Byers Co., A. M., Pittsburgh, Pa.
Chicago Nipple Mfg. Co., Chicago, Ill.
Creamery Package Mfg. Co., Chicago, Ill.
Detroit Ice Machine Co., Detroit, Mich.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

COLD STORAGE CONSTRUCTION
Armstrong Cork Co., Lancaster, Pa.
Frick Co., Waynesboro, Pa.

COLD STORAGE DOORS
Butcher Boy Cold Storage Door Co., Chicago, Ill.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Jamison Cold Stge. Door Co., Hagerstown, Md.

COMPRESSORS
(See Ice Making and Refrigerating Machinery)

COMPRESSOR VALVE PLATES AND DISCS
Voss, Inc., J. H. H., New York, N.Y.

COMPRESSOR VALVES
Voss, Inc., J. H. H., New York, N.Y.

CONDENSERS
Acme Industries, Inc., Jackson, Mich.
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
King-Zeero Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Rempe Company, Chicago, Ill.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

CONSULTING ENGINEERS
Greene, Van R. H., New York, N. Y.
Ophuls & Associates, Fred, New York, N. Y.

CONTROLLNG INSTRUMENTS
Taylor Instrument Companies, Rochester, New York

CONVEYORS
Capital Elevator & Mfg. Co., Columbus, Ohio
Conveyor Co., The, Los Angeles, Calif.
Gifford-Wood Co., Hudson, N. Y.
Lilly Co., The, Memphis, Tenn.

COOLING TOWERS
Frick Co., Waynesboro, Pa.
Vilter Mfg. Co., Milwaukee, Wis.

CORK INSULATION
Armstrong Cork Co., Lancaster, Pa.

CORROSION CONTROL
Wright Chemical Control Corp., Chicago, Ill.

COUPON BOOKS
Index Coupon & Supply Co., La Porte, Ind.

COVERINGS (PIPE AND BOILERS)
American Hair & Felt Co., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.

CYLINDERS (GAS & LIQUID)
Byers Co., A. M., Pittsburgh, Pa.

DEIONIZING EQUIPMENT
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

DEMINERALIZING EQUIPMENT
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

DIP TANKS AND CAN BASKETS
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Vogt Machine Co., Henry, Louisville, Ky.

DRIVES, TRANSMISSIONS
Frick Company, Waynesboro, Pa.

ELEVATING & CONVEYING MACHINERY
Capital Elevator & Mfg. Co., Columbus, Ohio
Conveyor Co., The, Los Angeles, Calif.
Gifford-Wood Co., Hudson, N. Y.
Lilly Co., The, Memphis, Tenn.

ENGINEERS AND ARCHITECTS
(See Architects and Engineers)

EVAPORATIVE CONDENSERS
Niagara Blower Co., New York, N.Y.

EVAPORATORS
Acme Industries, Inc., Jackson, Mich.
Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Niagara Blower Co., New York, N.Y.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

FEED-WATER HEATERS
National Pipe Bending Co., New Haven, Conn.
Vogt Machine Co., Henry, Louisville, Ky.

FIBERGLAS
Armstrong Cork Co., Lancaster, Pa.

FIELD ICE SAWS
Gifford-Wood Co., Hudson, N. Y.

FILTERS, CLARIFYING
Industrial Filter & Pump Mfg. Co., Inc., Chicago, Ill.

FILTERS, WATER
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Industrial Filter & Pump Mfg. Co., Inc., Chicago, Ill.

FILTRATION EQUIPMENT
Industrial Filter & Pump Mfg. Co., Inc., Chicago, Ill.

FIN COILS
Acme Industries, Inc., Jackson, Mich.
Rempe Company, Chicago, Ill.

DIRECTORY

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FITTINGS
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Henry Valve Co., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

FLOAT VALVES
Mojonnier Bros. Co., Chicago, Ill.

FROZEN FOOD LOCKERS
Knickerbocker Stamping Co., Parkersburg, W. Va.

FUEL OIL PRE-HEATERS
National Pipe Bending Co., New Haven, Conn.
Rempe Company, Chicago, Ill.

HAND TRUCKS
Ohio Galvanizing & Mfg. Co., Niles, Ohio

HOISTING APPARATUS
Capital Elevator & Mfg. Co., Columbus, Ohio
Conveyor Co., The, Los Angeles, Calif.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.

HUMIDITY AIR CONDITIONERS
Niagara Blower Co., New York, N.Y.

HYGROMETERS
Taylor Instrument Companies, Rochester, N. Y.

ICE BAGS
Union Bag & Paper Corp., New York, N. Y.

ICE BLOWERS
Conveyor Co., The, Los Angeles, Calif.
Gifford-Wood Co., Hudson, N. Y.

ICE CANS
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Ohio Galvanizing & Mfg. Co., Niles, Ohio

ICE CAN FILLERS
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Vogt Machine Co., Henry, Louisville, Ky.

ICE CHIPPERS
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.

ICE CHUTES
Conveyor Co., The, Los Angeles, Calif.
Frick Co., Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Jamison Cold Storage Door Co., Hagerstown, Md.

ICE CONVEYORS
Capital Elevator & Mfg. Co., Columbus, Ohio
Conveyor Co., The, Los Angeles, Calif.
Gifford-Wood Co., Hudson, N. Y.
Lilly Co., The, Memphis, Tenn.

ICE CREAM PLANTS
Frick Co., Waynesboro, Pa.

ICE CRUSHERS
Bateman Foundry & Machine Co., Inc., Mineral Wells, Texas
Conveyor Co., The, Los Angeles, Calif.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Lilly Co., The, Memphis, Tenn.
Tri-Pak Machinery Service Inc., Harlingen, Texas

ICE CUBE CONTAINERS
Index Coupon & Supply Co., La Porte, Ind.
Lilly Co., The, Memphis, Tenn.
Union Bag & Paper Co., New York, N. Y.

ICE CUBING MACHINES
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Lilly Co., The, Memphis, Tenn.

ICE DELIVERY BAGS
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Lilly Co., The, Memphis, Tenn.
Union Bag & Paper Corp., New York, N. Y.

ICE HARVESTING MACHINERY & TOOLS
Gifford-Wood Co., Hudson, N. Y.

ICE MAKING AND REFRIGERATING MACHINERY
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Detroit Ice Machine Co., Detroit, Mich.
Enterprise Equipment Corp., Yonkers, N. Y.
Frick Company, Waynesboro, Pa.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

ICE PICKS
Conveyor Co., The, Los Angeles, Calif.

ICE PICKS AND PLANERS
Conveyor Co., The, Los Angeles, Calif.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Lilly Co., The, Memphis, Tenn.

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BOWER
B B BRAND
AMMONIA

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Est. 1858

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EVAPORATOR PRESSURE CONTROLS
AMMONIA COMPRESSORS
Wolf Linde
Est. 1880
FREON VALVES UP TO 12"
AMMONIA VALVES AND FITTINGS

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WEATHERPROOFED ICE SIGNAL CARDS

Coated Both Sides With Paraffine

ANY COLOR

ANY SIZE

We Make Any Design of Ice Signal Card

Send In Your Individually Designed Cards for Quotation

Write for Ice Signal Card Circular and Prices

Index Coupon & Supply Co.

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A Layne built well water supply system on your own property is an excellent investment. First, it greatly increases your water supply at little or no extra cost over what you are now paying. Next, it gives you better protection for your plant, equipment and offices. Once installed, your own system will end worry about water supply failure and relieve you of paying high rates. Send for Layne's newest catalogs on well water systems. No obligation. Address

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General Offices, Memphis 8, Tenn.

Layne **WATER SUPPLY WELLS & PUMPS**

THE BUYERS

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ICE PICK SCABBARDS
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.

ICE PLANTS
Enterprise Equipment Corp., Yonkers, N. Y.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.

ICE SCALES
Conveyor Co., The, Los Angeles, Calif.
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
Lilly Co., The, Memphis, Tenn.

ICE SHAVERS
Conveyor Co., The, Los Angeles, Calif.

ICE TOOLS
Conveyor Co., The, Los Angeles, Calif.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Lilly Co., The, Memphis, Tenn.

INDICATING INSTRUMENTS
Taylor Instrument Companies, Rochester, New York

ICE VENDORS
Frick Company, Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Jamison Cold Storage Door Co., Hagerstown, Md.
S & S Vending Machine Co., San Jose, Calif.

INSTANTANEOUS HEATERS
National Pipe Bending Co., New Haven, Conn.

INSULATING MATERIALS
American Hair & Felt Co., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Pacific Lumber Co., San Francisco, Calif.

INSULATION ADHESIVES
American Bitumuls & Asphalt Co. San Francisco, Calif.

LOW TEMPERATURE EQUIPMENT
(See Ice Making and Refrigerating Machinery)

MAGNETIC FLOAT SWITCHES
Mojonnier Bros. Co., Chicago, Ill.

MATERIALS HANDLING EQUIPMENT
Conveyor Co., The, Los Angeles, Calif.
Ohio Galvanizing & Mfg. Co., Niles, Ohio

OIL AND LUBRICANTS
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

OIL SEPARATORS
King-Zeero Co., Chicago, Ill.
Rex Engineering & Sales Co., Oklahoma City, Okla.

OILS, CUTTING
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

OILS, FUEL
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

PACKINGS
Frick Company, Waynesboro, Pa.

PIPE COILS AND BENDS
Acme Industries, Inc., Jackson, Mich.
Chicago Nipple Mfg. Co., Chicago, Ill.
Frick Company, Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

PIPE WELDING
Acme Industries, Inc., Jackson, Mich.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

PIPING
Acme Industries, Inc., Jackson, Mich.
Byers Co., A. M., Pittsburgh, Pa.
Frick Company, Waynesboro, Pa.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

PRESSURE BLOWERS
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

PRESSURE REGULATORS
Taylor Instrument Companies, Rochester, N. Y.

PROPELLERS
Ice Plant Equipment Co., Inc., Philadelphia, Pa.

PUMPING MACHINERY
Aurora Pump Co., Aurora, Ill.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Layne & Bowler, Inc., Memphis, Tenn.
Roots-Connersville Blower Corp., Connersville, Ind.

PUMPING MACHINERY—AIR LIFT
Roots-Connersville Blower Corp., Connersville, Ind.

PUMPS, AMMONIA AND BRINE
Frick Company, Waynesboro, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.
Vogt Machine Co., Henry, Louisville, Ky.

PUMPS, DEEP WELL
Aurora Pump Co., Aurora, Ill.
Layne & Bowler, Inc., Memphis, Tenn.

PUMPS, ROTARY
Aurora Pump Company, Aurora, Ill.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

DIRECTORY

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PURGERS
Armstrong Machine Works, Three Rivers, Mich.
Frick Company, Waynesboro, Pa.
Rex Engineering & Sales Co., Oklahoma City, Okla.

RAW WATER FREEZING SYSTEMS
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

REBOILERS
Frick Company, Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

RECORDING THERMOMETERS
Taylor Instrument Companies, Rochester, New York

REFRIGERATED ICE STATIONS
S & S Vending Machine Co., San Jose, Calif.

REFRIGERATING AND ICE MAKING MACHINERY
(See Ice Making and Refrigerating Machinery)

RUST PREVENTATIVES
Bower Chemical Mfg. Co., Henry Philadelphia, Pa.

SCORING MACHINES
Frick Company, Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Lilly Co., The, Memphis, Tenn.
Perfection Ice Scoring Machine Co., Fort Worth, Texas

SECOND HAND MACHINERY
Enterprise Equipment Corp., Yonkers, N. Y.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.

SEPARATORS OIL, STEAM AND AMMONIA
Acme Industries, Inc., Jackson, Mich.
Frick Company, Waynesboro, Pa.
King-Zeero Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

SHOULDER PADS
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
Lilly Co., The, Memphis, Tenn.

SIZED ICE EQUIPMENT
Bateman Foundry & Machine Co., Inc., Mineral Wells, Texas
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Lilly Co., The, Memphis, Tenn.

SPRAY NOZZLES
Ice Plant Equipment Co., Inc., Philadelphia, Pa.

STORAGE HEATERS
National Pipe Bending Co., New Haven, Conn.

STRAINERS
Ice Plant Equipment Co., Inc., Philadelphia, Pa.

TANKS
Frick Company, Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

TARPAULINS
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Lilly Co., The, Memphis, Tenn.

THERMOMETERS
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Taylor Instrument Companies, Rochester, New York

THERMOMETERS, RECORDING
Taylor Instrument Companies, Rochester, New York

TIERING MACHINES
Capital Elevator & Mfg. Co., The, Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

TRAPS, OIL & STEAM
Armstrong Machine Works, Three Rivers, Mich.
Rex Engineering & Sales Co., Oklahoma City, Okla.

UNIT COOLERS
Acme Industries, Inc., Jackson, Mich.
Niagara Blower Co., New York, N.Y.
Rempe Company, Chicago, Ill.

USED MACHINERY
Enterprise Equipment Corp., Yonkers, N. Y.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.

VALVES AND FITTINGS
Alco Valve Co., St. Louis, Mo.
Frick Company, Waynesboro, Pa.
Henry Valve Co., Chicago, Ill.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
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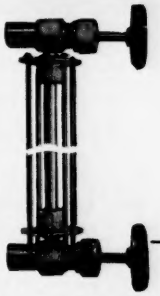

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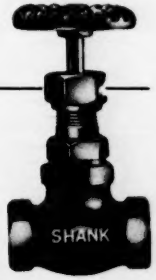

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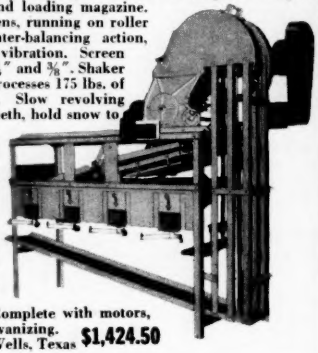
LOADER SHAKER SIZER

This new Bateman unit, incorporating revolutionary design that eliminates vibration on frame of shaker, assures added years of service and economy. One man can keep unit in operation, bagging and loading magazine.

Three sizer screens, running on roller bearing in counter-balancing action, operate without vibration. Screen openings, 1½", ¾" and ⅜". Shaker motor ½ H.P. Processes 175 lbs. of ice per minute. Slow revolving drum, 12 large teeth, hold snow to absolute minimum. Removable plate on side of crusher so teeth can be changed easily and quickly. Five grate adjustments to help size ice before it reaches sizing screen.



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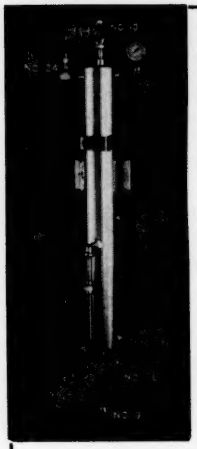

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*Excess head pressure of 10 lbs. in a 25 ton refrigeration plant increases power costs in 6 months, equal to the cost of a Rex Air Purger.

Many plants operate with excess pressure of from 10 to 50 lbs.—a direct result of air in the system. Just think what this means in increased power consumption.

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All Used Equipment Is Reconditioned In Our Modern Machine Shop

THIS IS ONLY A PARTIAL LIST-WRITE ABOUT ANY REQUIREMENTS WHICH YOU HAVE WE ARE BUYING ADDITIONAL EQUIPMENT ALL OF THE TIME

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1—4x4 York, 300 RPM	16
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1—7x7 Frick, 200 RPM	40
1—7½x7½ York, 200 RPM	51
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1—300 lb. ULINE, fully automatic cuber	501
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3—100 ton shell and tube condensers retubed	919
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4000 Cans—Like new—11"x22"x47"	950

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POSITIONS AND HELP WANTED

POSITION WANTED—Warehouse executive, interested in relocating. Over twenty years experience in all phases refrigerated and general merchandise warehousing. Presently employed as general manager of medium sized operation. Excellent references. Address Box IU-7, Ice and Refrigeration.

ICE PLANTS—for sale

FOR SALE—approximately 50 ton raw water, electric power driven ice plant, complete; now in operation, with good territory. No other ice plant in county of 40,000 population. This plant has approximately 700 tons ice storage. Terms can be arranged The Enterprise Ice & Coal Co., Harriman, Tenn.

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MISCELLANEOUS

NEW AMMONIA COMPRESSORS

1—8x8" Frick, 1—5½"x5½" Vilter, 2—5"x5" Worthingtons.
Just as received from the factories.
Priced right—Immediate shipment.

Address Box DC-8
ICE AND REFRIGERATION

USED EQUIPMENT-wanted & for sale

FOR SALE—1 Vilter compressor 10½x11½ with synchronous motor 150 h.p. installed new in 1948, operated approximately four months each year. Can be inspected and operated at Vigo Ice Company, 120 N. Water St., Terre Haute, Ind.

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1—150 ton York ice plant, 13 can pull; 10 years old—equal to new.
1—50 ton York ice plant, new compressors installed in 1947.
1—Complete Frick ice making Tank—27 can pull, 6½ ton crane.
1—11x13 York ammonia compressor direct connected to 150 h.p. synchronous motor.
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1—Perfection "Special" scoring machine, scores and upends.
1—Type "F" Gifford-Wood scoring machine — 2 years old.
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Phone: BAldwin 9-8549

USED EQUIPMENT—continued

WANTED—Ice cuber at least 100 pounds capacity. Write giving kind, size, age and price. City Ice & Cold Storage Co., 126 W. Dunklin St., Jefferson City, Mo.

FOR SALE—Two 5 ton Belt Flake ice makers. New. Installed but never used. Can make price right for immediate shipment. Fairmont Foods Co., Omaha 8, Nebr., Purchasing Dept.

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Prices F.O.B. Miami, subject to prior sale.

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1—6½x6½ York ammonia compressor with capacity control valves.
1—6½x6½ York ammonia compressor 200 r.p.m.
1—5x5 Frick ammonia compressor 277 r.p.m.
1—4x4 York ammonia compressor 400 r.p.m.
1—4x4 York self-contained unit.
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1000 ice cans, various sizes.
Motors and starters for all compressors.
Condensers, brine coolers, cranes, can dumps, can fillers, valves and fittings. Send us your requirements on any equipment that you may need.

B & E REFRIGERATING CO.
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Frick 30"x16'0", 100 ton, 80 tube vertical single pass condenser. Excellent condition, $450.00. Good ammonia valves, both screw and flange types, ½" to 6", at bargains.

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3—100 ton York and Frick ice plants.
1—50 ton York ice plant.
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1—200 ton York ice plant.
1—120 ton York ice plant.
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1—Perfection 2 way scoring machine.
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Conveyor chain—6" pitch.
Send us your requirements on equipment you need.

UNITED SUPPLY & EQUIPMENT CO., INC.
55 Beverly Street Boston 14, Mass.

FOR SALE—ICE PLANTS & EQUIPMENT

20-50-60-100 Ton Ice Plants—Immediate Sale
Ice Cans—11 x 22 x 47" Excellent Condition
Ice Cans—11 x 22 x 51"—Excellent Condition
1—York 12½"x14½" Ammonia Compressor High Speed
1—Frick 12 x 12" Ammonia Compressor direct connected to Deisel Engine—can be purchased without Diesel.
1—York 10 x 10" Ammonia Compressor direct connected to synchronous motor 3/60/440 Speed 300.
1—York 10 x 10" Ammonia Compressor direct connected to 60 H.P. synchronous motor 200 R.P.M.
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1—York 10 x 10" Ammonia Compressor 200 R.P.M.
1—York 10 x 10" Ammonia Compressor High Speed.
Parts for York 10 x 10" Cylinder Block, Top Heads, Pistons and connecting rod.
1—York 8 x 8" Ammonia Compressor direct connected to 60 H.P. synchronous motor 360 R.P.M.
1—York 8 x 8" Ammonia Compressor High Speed.
1—York 6 x 6" Ammonia Compressor High Speed.
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2—Frick 3 x 3" H.S. Self contained units.
Can supply motors for all compressors.
Low pressure blowers—all sizes.
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Brine coolers, submerged shell and tube type.
1¼" and 2" Ammonia Coils, approximately 10,000 feet.
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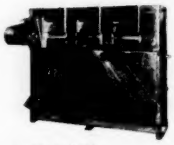

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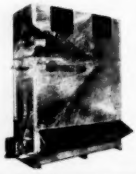
evaporative condensers



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2. Using standard A.S.R.E. ratings, capacities from 10 to 120 tons.
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The *ACME* Line is complete. No matter how unusual your heat transfer problem may be, you will find an adequate STANDARD model and size of equipment to suit your requirements. *ACME* Engineers are at your service. Write mentioning your needs and complete information will be mailed, without obligation.

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Dept. IR, Jackson, Michigan
CONTINUOUSLY SERVING THE REFRIGERATION AND AIR CONDITIONING INDUSTRY SINCE 1919

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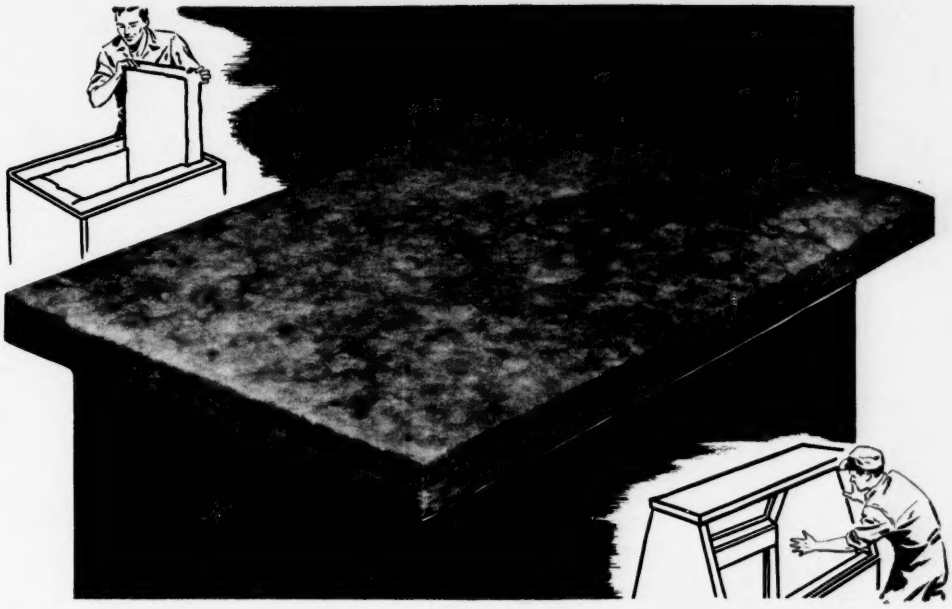

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A more efficient Fiberglas* insulation, designated as the "500" Series, is now available to manufacturers of refrigerated equipment of all types. Thoroughly performance-proved in laboratory tests and by actual production usage, this improved material offers such definite advantages that it has now replaced PF-611, 612, and 613 in the Fiberglas "600" Series. PF-614, 615, and 617, used primarily for sound deadening and load bearing, remain in the line.

A reduction in fiber diameter, made possible by improved production equipment, is the key to this better Fiberglas insulation. Finer fibers mean lower thermal conductivity, greater uniformity and smoothness, and a marked improvement in resilience. The improved conductivities of the new "500" Series as compared with those of the "600" Series that it replaces result in better operating efficiencies for refrigerated equipment and in some cases may permit reduction in wall thicknesses.

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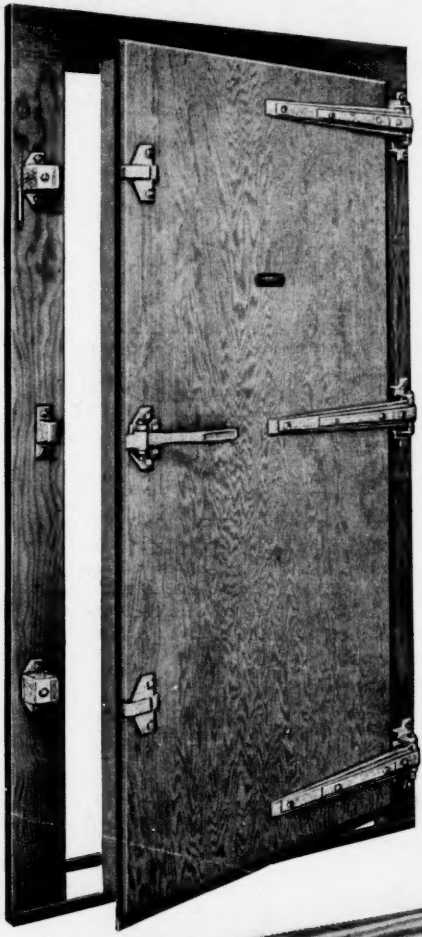
Why "MARINE QUALITY" Plywood

with plastic bonding

makes Series "50" the finest cold storage door ever built



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Synthetic resin bond used between all plies. Uniform strength of bond and stress equalization assured by hot pressing and tempering after setting.

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Passes test of alternate soaking 16 hours and drying 8 hours, repeated three times without affecting bond.

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Inorganic nature of bond will not support bacteria or fungi.

Monopanel Construction of Series "50" Doors Gives You These Other Advantages

- **Smooth One-Piece Panels**—Look better, easier to keep clean.
- **7 Times Stronger**—By test compared with horizontal sheathing. Cross lamination of plies distributes strength equally in both directions.
- **6 Times More Rigid**—By test compared with horizontal sheathing. Large one-piece panels front and back give extra rigidity of box frame construction.
- **Rugged Adjustable Hardware**—E-Z-Open TWO Point Fastener and Adjustoflex hinges specially developed by Jamison to maintain uniform gasket pressure.
- **Dependable Gasketing**—Resilient Lo-Temp gasket for top and sides and tough flexible Sillseal gasket for door sill.

For details and dimensions request Jamison Catalog No. 3.
Jamison Cold Storage Door Company, Hagerstown, Md., U.S.A.